Plan A Assessment Report
for Jet Fuel Storage Tank #20
Randolph AFB, Texas

LPST ID # 104626
Facility ID # 32523

Facility Name and Address:
Randolph Air Force Base
Jet Fuel Storage Tank #20
Randolph Air Force Base, Texas 78150-4513

Responsible Party:
12 CES/CEV
1651 Fifth Street West
Randolph AFB, Texas 78150-4513

Prepared by
Parsons Engineering Science, Inc.
Austin, Texas

March 27, 1996

Sam, FYI, Ed

PARSONS ENGINEERING SCIENCE, INC.
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March 31, 1997

via US Mail

Major Ed Marchand
USAF-HQ-AFCEE/ERT
3207 North Road, Bldg. 532
Brooks AFB, Texas 78235-5357

Subject: Plan A Assessment Report and Revised Site Closure Request.
LPST No. 104626, Jet Fuel Storage Tank #20, Randolph AFB, Texas
USAF Contract 41624-92-D-8036, Delivery Order 0017
Parsons ES Project No. 726876.33121

Dear Major Marchand:

Enclosed are three copies of the Plan A Assessment Report for the Tank #20 site at Randolph AFB. This report includes a revised Site Closure Request Form as attachment 20, in accordance with new guidance issued by the TNRCC in December 1996. Our recommendation for this LPST case number is to close the site from any additional action. No post-closure restoration or abandonment actions are proposed because it would jeopardize the integrity of synthetic liner recently installed around the tank berm and dike structure. The monitoring wells will be maintained to provide coverage of the tank #20 portion of the entire IRP site.

Three copies of this draft report were hand delivered on March 27, 1997 to Randolph AFB to the attention of Steve Barnes. Mr. Barnes will review the report, and if he agrees with its findings, and completeness, he will sign the appropriate sections of the report and deliver to the TNRCC. If Randolph AFB desires to include more information and data in this report than has been provided us, then we will incorporate any new information in the report and forward you additional copies of the revised report.

Contact me or John Ratz in Denver if you have any questions regarding the performance of this work or the contents of this submittal.

Sincerely,

Brian Vanderglas

Brian Vanderglas
Site Manager, LPST CAPM No.00758

c/enc: John Ratz, Project Manager
Steve Barnes, Randolph AFB

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SITE ASSESSMENT — Worksheet E

LPST ID: 104626
Site Name: Randolph Air Force Base
Site Location: Randolph, Texas

EXECUTIVE SUMMARY

Check all applicable boxes.

UST/AST System Status: ■ Active ☐ Permanently Removed from Service
☐ Temporarily Out of Service ☐ Temporarily Indefinitely Out of Service (Variance Due Date:_____)

Current site land use:
☐ vacant ☐ indus./coml. ☐ residential ☐ agricultural ☐ recreational ■ UST/AST Facility

Sources of Release: ☐ tank(s) ☐ piping ☐ spills ☐ dispenser ■ Other:Draining of water from tanks

Substance Released:
☐ gasoline ☐ diesel ☐ waste oil ☐ hydraulic fluid ☐ AV gas ■ jet fuel ☐ Other: _____

Site Assessment History:
■ Preliminary/LSA ☐ Groundwater Monitoring ■ Remedial Action ☐ Emergency Response

Affected environmental media: ☐ surficial soil (<2 ft. BGS) ■ soil (2 to 15 ft. BGS) ☐ soil (>15 ft. BGS)
☐ groundwater ☐ surface water ☐ air

Identified affected receptors: ☐ water wells ☐ basements/structures ☐ habitat ☐ building ☐ underground utilities ☐ surface water ☐ exposed contaminated soil ☐ Other Distance from site (ft.):None

Samples collected ■ yes ☐ no Abatement initiated: ■ yes ☐ no Type:*In situ* bioremediation

Identified potential receptors: ☐ water wells ☐ basements/structures ☐ habitat ☐ building ☐ underground utilities ☐ surface water ☐ exposed contaminated soil ☐ Other Distance from site (ft.):None

Depth to first encountered groundwater (ft.) BGS: ☐ >50 ■ 15-50 ☐ 0-15; discontinuous

Presence of NAPLs (ft.):
☐ sheen ☐ 0.1-0.5 ft. ☐ 0.5-2 ft. ☐ 2-5 ft. ☐ >5 ft. ■ none Recovery Initiated: ☐ yes ☐ no N/A

Current NAPL extent: ☐ on-site ☐ off-site N/A

Dissolved-phase extent: ☐ on-site ☐ off-site ☐ unknown N/A

Groundwater beneficial use category:
☐ Cat. I ☐ Cat. II ☐ Cat. III ■ Cat. IV ☐ Soils only affected, regional beneficial use can not be established.

Contaminants of Concern Exceed Target Concentrations of Affected media:

Soil (Worksheets 7.0, 11.1-5):	☐ yes ■ no
Groundwater (Worksheet 8 & 11.1-4):	☐ yes ■ no
Vapors (Worksheet 9.0):	☐ yes ■ no
Surface Water (Worksheet 10.0):	☐ yes ■ no

Site Priority: 1._____ 2._____ 3._____ 4._X_

Recommended Actions:

☐ a) Affected Receptors Identified - Propose additional corrective action and/or monitoring program.

■ b) Site does not exceed Plan A criteria - Submit site closure request form.

☐ c) Site does not exceed Plan A criteria - Propose verification groundwater monitoring program.

☐ d) Site exceeds Plan A criteria - Propose corrective action to achieve Plan A criteria.

☐ e) Site exceeds Plan A criteria - Propose Plan B risk assessment and/or evaluation.

LPST ID: 104626

SITE DESCRIPTION

Location Description

Facility Name: Randolph Air Force Base

Address: Jet Fuel Storage Tank #20

Cross-Street: Fourth Street West

City: Randolph Air Force Base

County: Bexar

Current Site Water Supply: Edwards Aquifer

Notes: Tank #20 is a 420,000 gallon tank measuring 32 feet high by 50 feet in diameter. It is currently used to store JP-4 jet fuel. A containment system consisting of a synthethic liner and concrete apron were constructed at the tank site in 1994 to support the existing earthen dike.

Topography

Terrain: ■ Flat ☐ Steep ☐ Variable

Ground Surface Slope
Direction_____ Grade (ft./ft.)___

Other Comments:

Discuss any significant onsite or adjacent significant topographic feature.

Local Climate:

Average Annual Rainfall (in.): 28

Within 100 Year Floodplain: ☐ yes / ■ no

Other Comments:

Discuss recent (i.e., within the past year) extreme climatic changes. Discuss engineered modifications to floodplain status or designation.

The tank is surrounded by a 4-foot high containment berm.

LPST ID: 104626

LAND USE

PAST, CURRENT, AND FUTURE USE (check all that apply)

■ Past use of site:
- ☐ Commercial/Industrial
- ☐ Residential
- ☐ Agricultural
- ☐ Recreational
- ☐ Vacant
- ■ UST/AST Facility

■ Past Predominant Land Use of the Area:
- ■ Commercial/Industrial
- ☐ Residential

Describe: Tank farm for supplying flight operations at Randolph Air Force Base.

■ Current use of site:

of the Area:
- ■ Commercial/Industrial
- ☐ Residential
- ☐ Agricultural
- ☐ Recreational
- ☐ Vacant
- ■ UST/AST Facility

■ Current Predominant Land Use
- ☐ Commercial/Industrial
- ☐ Residential

■ Type of Residential Area:
- ☐ Minority/Low Income ☐ Non-minority/Low Income
- ☐ Other

Describe: _____

■ Future use of site:
- ☐ Commercial/Industrial
- ☐ Residential
- ☐ Agricultural
- ☐ Recreational
- ☐ Vacant
- ■ UST/AST Facility

■ Future Predominant Land Use of the Area:
- ☐ Commercial/Industrial
- ☐ Residential

Describe: Tank #20 is a 42,000 gallon tank currently used to store JP-8. No change foreseen.

List all facilities (not limited to PST regulated) within 500 feet of the site that could be a source of contaminants:

Other Comments:

Facility Name & Type: Randolph AFB
Address: Jet Fuel Storage Tank #21
Facility No.: 41101
LPST ID No. N/A
Owner/Operator: Randolph AFB

Facility Name & Type:
Address:
Facility No.:
LPST ID No.
Owner/Operator:

Facility Name & Type:
Address:
Facility No.:
LPST ID No.
Owner/Operator:

Additional facilities may be listed and noted on Attachment 2.

LPST ID: 104626

WATER WELL INVENTORY

SUMMARY OF WELLS WITHIN 0.5 MILE RADIUS OF THE SITE

			Downgradient Direction		
	Total No.	Active No.	Total No.	Active No.	No. Screened in Affected Zone
Public/Municipal:	2	2	0	0	0
Industrial:					
Domestic:					
Agricultural:	1	1	0	0	0
Observation: (Destroyed)	1	0			

POTENTIAL RECEPTOR POINTS

	Closest Downgradient Water Well	Closest Downgradient Well Screened Within Affected Zone
Well No./Designation:	None within 500 feet	None
Distance from Site (ft.):	NA	NA
Total Well Depth (ft.):	NA	NA
Current Use of Water:	NA	NA
Screened Interval below Ground Surface (ft):	NA	NA
Year Constructed:	NA	NA

(No wells listed above.)

Comments: *(Include discussion of any ordinances which prevent or influence the future installation of water wells at the site or surrounding area.)*

Affected groundwater is perched, discontinuous zone.

LPST ID: 104626

RECEPTOR SURVEY

Underground Utility Survey

Nearest Underground Utility
Name: Tank 1041 No. 20
Type: Fuel transfer lines
Depth of Utility: 4.0'
Distance & Direction
From Affected Zone: Refer to Attachment 1

Nearest Downgradient Utility
Name: Tank 1040 No. 21
Type: Fuel transfer lines
Depth of Utility: 4.0'
Distance & Direction
From Affected Zone: Refer to Attachment 1

Other Comments:

Discuss other receptors and indicate on Attachment 2. If affected discuss abatement measures.

Underground fuel transfer pipelines

Building Survey

Nearest Building
Name: Building 1042
Type: Utility
Distance & Direction
From Affected Zone: 200' south

Nearest Downgradient Building
Name: Undetermined
Type:
Distance & Direction
From Affected Zone:

Other Comments:

Discuss nearest and other receptors and indicate on Attachment 2. Buildings should include residences, schools, day care facility, nursing home, etc.

Building 1042 contains no basement.

A building is currently under construction northeast of the site within 500 feet of LPST 104626. The planned use of the building is NCO CLUB.

Surface Water Hydrology

Nearest Surface Water
Name: None
Type: N/A
Distance & Direction
From Affected Zone: N/A

Impacted Surface Water
Name: None
Type: N/A
Distance & Direction
From Affected Zone: N/A

Nearest Downgradient Surface Water
Name: None
Type: N/A
Distance & Direction
From Affected Zone: N/A

Other Comments:

If affected complete Worksheet 10.0. Describe potential for affected storm water or groundwater discharge to surface water feature.

LPST ID: 104626

HABITAT SURVEY

Presence of Sensitive Habitat

Site located within or affects a sensitive or protected habitat? ☐ yes (explain below) ■ no

Name: _____

Location: _____

Discussion: *Provide the habitat type (wildlife sanctuary, wetlands, etc.), condition, regulatory authority, and other information relative to habitat characterization.*

SUMMARY AND RECOMMENDED ACTION

Observed or Potential Impacts	-	Recommended Action
■ None observed or anticipated	-	No action required
☐ Potential for Significant Impact	-	Additional Corrective Action Required (See Attachment 20)
☐ Significant Impact Observed	-	Additional Corrective Action Required (See Attachment 20)

Comments: *Discuss any emergency abatement and continued corrective action.*

Corrective actions to date have included installation and sampling of groundwater monitoring wells and soil borings to define extent of subsurface contamination and to determine impacts, if any, of contaminants on groundwater. A bioventing system was installed in 1992 and has been continuously operating since installation to accelerate bioremediation of petroleum hydrocarbon contamination.

LPST ID: 104626

SITE ASSESSMENT HISTORY

SUMMARY OF PREVIOUS SITE ACTIVITIES

Typical site activities to be recorded include:
- Preliminary/Limited/Comprehensive Site Assessment
- Emergency Response • Risk/Exposure Assessment • Remedial/Corrective Actions

Types of sampling to be included: • Soil • Groundwater • Surface Water • Vapors

Date Completed	Description of Activity	Sampling and Testing	Result/Impact/Target Cleanup
9/92	Site Assessment. Drilled eight borings and installed three monitoring wells (two of which are dry wells.)	Collected soil samples in all borings and collected one groundwater sample.	Soil contamination occurs mostly from surface to 12.0 feet BGS. Water has not been impacted.
5/93	Bioventing Pilot Test. Installed three vent wells, three monitoring points, and one blower.	Collected soil samples and initial soil gas samples. Conducted air permeability and respiration tests.	Initial soil gas results indicated that biological fuel degradation has depleted the oxygen supply in the soil vadose zone. Bioventing testing indicated that air injection would be a good method for accelerating bioremediation of hydrocarbon contamination.
5/94	1-Year Bioventing Test. Collected soil gas samles and conducted an *in situ* respiration test. Performed system maintenance.	Collected soil gas samples. Performed bioventing system checks. Compared initial soil gas and *in situ* respiration results to the 1-year results.	TVH concentrations had fallen and respiration rates have dropped, but O_2 consumption was still observed, indicating that organic contaminants may still be present in subsurface soils and that biodegradation is still occurring.
5/96	Extended Bioventing Test. Collected soil gas samples and conducted an *in situ* respiration test.	Collected soil gas samples. Performed bioventing system checks. Compared results of the initial and 1-year soil gas and *in situ* respiration results to results from extended tests.	Respiration rates have slowed to near background levels and TVH levels are near nondetectable levels.

LPST ID: 104626

UST/AST SYSTEM CHARACTERIZATION

Release Information

UST/AST System Status:
■ Active ☐ Permanently Removed From Service
☐ Temporarily Out of Service
☐ Temporarily/Indefinitely Out of Service (Due Date:___)

Method of release discovery:
☐ UST Removal ☐ Release Detection Equipment
☐ Divestiture Assessment ☐ Inventory Control
☐ System Tightness Testing ■ Other_____

Substance released (check all that apply):
☐ Gasoline ☐ Diesel ☐ Waste Oil
☐ AV Gas ■ Jet Fuel ☐ Hydraulic Fluid
☐ Other_____

Source of release(s): Date Discovered:
☐ Spills/overfills _____
☐ Piping _____
☐ Dispenser _____
☐ Tank _____
■ Other Draining of water condensation from tanks

Other Comments:

Describe the measures taken to abate the release:

Brief Chronology of Events

08/27/92 EEI installed 4 soil borings (B1, B2, B3, B4) around tank #21

08/28/92 EEI installed 5 soil borings (B5, B6, B7, B8, B9) around tank #20

09/01/92 Laboratory analyses of the soil core samples collected from the soil borings around tank #21 (B1, B2, B3, B4) indicated TPH concentrations ranging from nondetectable to 190 ppm.

09/02/92 Laboratory analyses of the soil core samples collected from the soil borings around tank #20 (B5, B6, B7, B8, B9) indicated TPH concentrations ranging from 24 ppm to 1100 ppm.

09/10/92 TWC (William Ryan) was notified of the release. Installed bioventing system, upgraded containment area.

Removal Information

Date(s) of removal(s): N/A
Type of removal:
☐ Removal from the ground ☐ Closure in place
Water in tankhold during excavation? ☐ yes ☐ no
Depth of water in tankhold (BGS):
☐ <5 ft. ☐ 5-10 ft. ☐ 11-15 ft. ☐ None
NAPL: ☐ yes ☐ no Thickness (ft.): _____
Water Evacuated from tankhold: ☐ yes ☐ no
Volume (gal.): _____
Groundwater recharged into tankhold: ☐ yes ☐ no
Depth (ft. BGS): _____
Status of excavation(s):
☐ Open with water ☐ Open/dry
☐ Backfilled with impervious cover
☐ Backfilled with no impervious cover
Type of fill material:
☐ Untreated backfill ☐ Treated backfill
☐ Other
☐ Clean fill - gravel ☐ Clean fill - sandy/clay

Other Comments:

Provide the maximum contaminant concentrations milligrams per kilograms (mg/kg) of untreated backfill returned to the tankhold(s): Benzene____ TEX____ TPH____ OTHER___. If a new UST/AST system was installed describe & indicate on Attachment 1.

N/A

Maximum level of contamination detected in native soils upon completion of removal/repair (mg/kg):

Chemical of Concern	Sample Date	Sample Location/Depth	Laboratory Method Detection Limit	Maximum Concentration (mg/kg)
Benzene	N/A			
Toluene	N/A			
Ethylbenzene	N/A			
Total Xylenes	N/A			
TPH	N/A			
Metals	N/A			
VOC	N/A			
Other_____	N/A			

LPST ID: 104626

SOIL ASSESSMENT

SOIL DATA COLLECTION AND EVALUATION

Number of soil sampling points: 27 soil samples from 12 borings

Method of determination: ☐ Direct Push ■ Borings ☐ Other: _____

Surface cover over affected soil zone (check all that apply):
■ Concrete ■ Asphalt ☐ Gravel ☐ Dirt ☐ Grass ☐ Other: _____

Percent of affected soil zone covered with impervious cover:
☐ 0-25 % ☐ 25-50 % ☐ 50-75 % ■ 75-100%

If there is no impervious surface cover, is there public access to the affected surface (0-2 ft.) soil? ☐ yes ■ no

Affected soil zone thickness (ft.): 7.5 ft

*Affected soil zone surface area dimensions (ft.): 60 ft radius

Maximum depth of contamination exceeding appropriate Plan A risk-based levels: N/A ft. BGS

*Estimated volume of soil exceeding Plan A target concentration (yd^3): 0.0

*Minimum distance from affected soil zone to property boundary: ☐ 0-10 ft. ☐ 10-50 ft. ☐ 50-100 ft.
■ 100-300 ft. ☐ 300-500 ft. ☐ >500 ft. ☐ Extends beyond property boundary

Waste disposal: ☐ Landfill ■ On-site treatment ☐ Off-site treatment
☐ Other ☐ Pending ☐ None

Maximum level of contamination detected in native soils (mg/kg):

Chemical of Concern	Sample Date	Sample Depth (ft.)	Sample ID	Laboratory Method Detection Limit	Max Conc. (mg/kg)	Target Cleanup Goals †
Benzene	8/27/92	9.0 ft	B1-9	mg/kg	<0.4	6.3
Toluene	8/27/92	9.0 ft	B1-9	mg/kg	0.4	3257
Ethylbenzene	3/18/93	1.0 ft	MPA	mg/kg	13.0	3357
Total Xylenes	3/18/93	1.0 ft	MPA	mg/kg	130.0	968
TPH	8/28/92	2.0 ft	B8-2	mg/kg	1100.0	N/A
Total Lead	8/28/92	3.0 ft	B6-3	mg/kg	21.0	
Naphthalene					99.0	
Other_____						
Other_____						

* Beyond the minimal requirements for a Site Assessment as defined by 30 TAC 334.
† Refer to Worksheets 11.1-5 and *Risk-Based Corrective Action for Leaking Storage Tank Sites*, RG-36, Table A-1.

LPST ID: 104626

* Geotechnical soil parameters:

Parameter	Result	Depth	Location/Sample ID	Method of Determination
Dry Bulk Density (g/m^3):				not tested
Effective Porosity (%):				not tested
Fraction Organic Carbon (g/g):				not tested
Intrinsic Permeability (cm^2):				not tested
Water Content (cm^3/cm^3):				
Other				

* Biodegradation Indicators:

Present spatial distribution of O_2, CO_2, CH_4, etc. levels on map. (Attachment 9)

Soil Inorganics	VW1-1	MPA-1	MPA-9.5	MPB-5
Iron (mg/kg)	6,060	13,600	14,500	15,500
Alkalinity (mg/kg as $CaCO_3$)	400	240	400	330
pH (mg/kg)	8.0	8.1	7.9	8.2
TKN (mg/kg	180	650	90	ND
Phosphates (mg/kg)	810	1,200	1,100	580
Soil Physical Parameters	**VW1-1**	**MPA-1**	**MPA-9.5**	**MPB-5**
Moisture (% wt.)	9.4	6.7	16.9	14.0
Gravel (%)	43	55	0	44
Sand (%)	38	10	2	35
Silt (%)	9	20	50	17
Clay (%)	10	15	48	4
Soil Temperature (°F)	**MPA-3**	**MPA-12**		
	59.8	64.8		

[a]/TRPH - total recoverable petroleum hydrocarbons; mg/kg = milligrams per kilogram; TVH = total volatile hydrocarbons; ppmv = parts per million, volume per volume; $CaCO_3$ = calcium carbonate; TKN = total Kjeldahl nitrogen, °F = degrees Fahrenheit.

[b]/ND = not detected.

LPST ID:104626

GROUNDWATER ASSESSMENT

GROUNDWATER DATA AND EVALUATION

Groundwater affected by release: ☐ yes ■ no (If no, complete only the Beneficial Groundwater Use Categories on this Worksheet.)

Site Hydrogeology	Upper Most Zone	Other
Depth to groundwater (ft.)	20 feet	
Aquifer type (Perched, confined, unconfined)	Perched	
*Estimated Aquifer thickness (ft.)	Unknown	
*Water level fluctuations (± ft.)	Unknown	
Gradient (ft./ft.)/Direction	Unknown	
*Saturated hydraulic conductivity (ft./day)	Unknown	
*Approximate well yield (gpd)	Unknown	
Lithology	Clayey to sandy silt	
Geologic Formation	Swficia	
Major/minor aquifer name	None	
Total dissolved solids (mg/ℓ)	572	
Confining layer depth (ft. BGS)	N/A	
Confining layer thickness (ft.)	N/A	

Beneficial Groundwater Use Categories

Mark the potential beneficial use category for the impacted zone and indicate the selection criteria. Complete the appropiate worksheet (11.1-5) for the Category indicated.

☐ Category I	☐ Category II	☐ Category III	■ Category IV
☐ Impacted or threatened water supply well(s)‡	☐ Affected groundwater zone TDS <3,000 ppm, and no beneficial use† is documented within 0.5 miles of the site.	☐ Affected groundwater zone TDS 3,000 - 10,000 ppm, and no beneficial use† within 0.5 miles of the site.	☐ Affected groundwater zone TDS >10,000 ppm, and no beneficial use† is documented within 0.5 miles of the site.
OR ☐ Affected groundwater zone TDS <3,000 ppm, and water well(s)‡ or water supply spring within 0.5 miles of the site. OR ☐ Soils only affected. Regional groundwater beneficial use† cannot be established.	OR ☐ TDS 3,000 - 10,000 ppm, and beneficial use† is documented within the 0.5 miles of the site.		OR ■ Well yield <150 gpd (i.e., affected zone is not considered to have a beneficial use†)

‡ If construction details of water well(s) are unknown or can not be proven, the interval is assumed to be connected.
† Applies to a drinking water source producing from the same or connected interval as the affected groundwater zone.

Groundwater Sampling Points

	On-Site (provide well ID)	*Beyond Property Boundary (provide well ID)
Number of Sampling points:	1 MW13	
Number of permanent monitoring wells:	3 (2 are dry)	
Static water levels above screened intervals: ☐ yes ■ no		

LPST ID:104626

DISSOLVED-PHASE PLUME

*Aerial extent of dissolved-phase plume (ft²): N/A

*Distance from edge of plume to property boundary if on-site: ☐ <10 ft. ☐ 10-50 ft. ☐ 50-100 ft. ☐ 100-300 ft. ☐ >300 ft.

*Distance from property boundary to edge of plume if off-site: ☐ <10 ft. ☐ 10-50 ft. ☐ 50-100 ft. ☐ 100-300 ft. ☐ >300 ft.

Maximum level of contamination detected in groundwater (mg/ℓ):

Contaminant	Sample Date	Sample ID	Laboratory Method Detection Limit	Maximum Concentration (mg/ℓ)	Target Cleanup Goals†
Benzene	9/22/92	MW13	PPM	0.200	N/A
Toluene	9/22/92	MW13	PPM	<.001	N/A
Ethylbenzene	9/22/92	MW13	PPM	0.006	N/A
Total Xylenes	9/22/92	MW13	PPM	<.001	N/A
MTBE					
TPH	9/22/92	MW13	PPM	4.9	
Naphthalene					
Other_____					

† Refer to Worksheet 11.1-3 and the *Risk-Based Correction Action for Leaking Storage Tank Sites*, RG-36, Table A1.

†† No target groundwater concentrations listed for beneficial use category IV groundwater.

NAPL PLUME

NAPL Present? ☐ yes ■ no

	On-Site (provide well ID)	Thickness (ft.)	*Beyond Property Boundary (provide well ID)	Thickness (ft.)
Current maximum NAPL thickness (ft.):	N/A	N/A	N/A	N/A

NAPL recovery method: ☐ hand bail ☐ passive skimmer ☐ sorbent socks ☐ automated system ■ none

Volume recovered to date (gals.): N/A

*Aerial extent of NAPL plume: (ft²) N/A ☐ beyond property boundary

*Distance from edge of NAPL plume to property boundary if on-site: ☐ <10 ft. ☐ 10-50 ft. ☐ 50-100 ft. ☐ 100-300 ft. ☐ >300 ft.

*Distance from edge of NAPL plume from property boundary if off-site: ☐ <10 ft. ☐ 10-50 ft. ☐ 50-75 ft. ☐ 75-100 ft. ☐ >100 ft.

* Biodegradation Indicators:

Present spatial distribution of dissolved Oxygen, dissolved CO_2, dissolved CH_4, Fe, SO_4, or other alternate electron acceptors on isoconcentration map. (Attachment 9)

LPST ID: 104626

VAPOR ASSESSMENT

VAPOR DATA AND EVALUATION

Known vapor impact: ☐ yes ■ no

Location: ☐ ambient air ☐ utilities ☐ residences
☐ hospital ☐ school/day care ☐ commercial buildings ☐ other:_____

Lower Explosive Limit (LEL) concentrations: ■ not measured ☐ measured ☐ calculated[1]

NAPL present or soil concentration near saturation (for calculating soil vapor concentrations, refer to *Risk-Based Correction Action for Leaking Storage Tank Sites*, RG-36): ☐ yes ■ no Depth (ft. BGS):_____

Vapor monitoring data:

Sample No.	Location	Depth	% LEL	Total Organic Vapors (ppmv)	Benzene (ppmv)	Other

If vapor concentrations exceed 25% of the LEL or other potential for explosive vapor exist in surface or subsurface structure, describe affected area, methods of determination, and any abatement measure. Identify and discuss any occupational or indoor air exposures to released contaminants. Provide all calculations for the determination of the target concentrations:

See attachment 15(c) for soil gas testing results.

[1]LEL% should reflect whole mixture evaluation. If more than one compound is present, actual measurement of vapors will typically be warranted.

LPST ID: 104626

SURFACE WATER ASSESSMENT

SURFACE WATER DATA AND EVALUATION

Surface water(s) affected: ☐ yes ■ no Name:_____ Type:_____
Name:_____ Type:_____

NAPL present on surface water or run off: ☐ yes ☐ no

NAPL recovery method: ☐ passive skimmer ☐ sorbent socks ☐ automated system ☐ booms ☐ other _____ ■ none

Volumes recovered to date (gals.): N/A

Aerial extent of NAPL plume (ft.²): N/A

Uses of affected surface water: ☐ drinking water ☐ contact recreation ☐ habitat for endangered species ☐ agriculture

Is a public or domestic surface water intake impacted? ☐ yes ■ no

If impacted lake or pond, indicate affected surface area (ft.²): N/A

Average depth of surface water (ft.): N/A

Maximum level of contamination detected in surface water (mg/ℓ):

Contaminant	Sample Date	Sample Location & ID	Laboratory Method Detection Limit	Maximum Concentration (mg/ℓ)	Target Cleanup Goals†
Benzene	N/A				
Toluene	N/A				
Ethylbenzene	N/A				
Total Xylenes	N/A				
MTBE	N/A				
TPH	N/A				
Naphthalene	N/A				
Other_____	N/A				
Other_____	N/A				

† Refer to 30 TAC, Chapter 307, the MCL or the *Risk-Based Correction Action for Leaking Storage Tank Sites*, RG-36.

Describe affected area, methods of determination and any abatement measures. Discuss the migration pathway between the source of contamination and the surface water body.

PAGES 17, 18 + 19

ARE

MISSING

IN

ORIGINAL

DOCUMENT

LPST ID: 104626

PLAN A EVALUATION

CATEGORY IV: Soil Target Cleanup Level Determination

- Complete this worksheet for Category IV sites. Check the appropriate column indicating the predominant land use and surface cover.
- Indicate the maximum detected soil concentration for the chemical of concern in the column checked. Check the box for each compound that exceeds the target concentration. If any boxes are checked, further corrective action will be required.
- Dermal exposure should be calculated if depth to groundwater is <15 feet, unless documentation can be provided that surface cover will be maintained and/or construction practices will not encroach upon groundwater[a]. For dermal exposure calculations refer to Chapter 10 of *Dermal Exposure Assessment, Principles and Applications (Interim Report)*, EPA/600/8-91/011B.NTIS PB92205665. Attach and provide all dermal exposure assessment calculations. Provide tables which include result and maximum detected concentrations.
- If other chemicals of concern are present but not listed, refer to *Risk-Based Corrective Action for Leaking Storage Tank Sites (RG-36).*

Chemical of Concern	☐ RESIDENTIAL ☐ Surface to 2 Feet Without Impervious Cover (Soil mg/kg)		☐ RESIDENTIAL ☐ 2-15 Feet Without Impervious Cover ☐ Surface to 15 Feet with Impervious Cover (Soil mg/kg)		■ COML./INDUSTRIAL Surface to 15 feet Regardless of Surface Cover (Soil mg/kg)	
	Target Concentrations Based on Ingestion and Inhalation	Maximum Laboratory Analyzed Concentration	Soil Target Concentrations Based on Ingestion	Maximum Laboratory Analyzed Concentration	Target Concentrations Based on Ingestion/Inhalation	Maximum Laboratory Analyzed Concentration
BENZENE	☐		☐ 22		☐ 10	0.200
ETHYLBENZENE	☐		☐ 3357[b]		☐ 3357	0.006
TOLUENE	☐		☐ 3257[b]		☐ 3257	<.001
XYLENE	☐		☐ 968[b]		☐ 968	<.001
ACENAPHTHENE	☐		☐ 314[b]		☐ 314	
ANTHRACENE	☐		☐ 13[b]		☐ 13	
BENZO(A)ANTHRACENE	☐		☐ 0.877		☐ 7.8	
BENZO(B)FLUORANTHENE	☐		☐ 0.877		☐ 7.8	
BENZO(K)FLUORANTHENE	☐		☐ 8.77		☐ 47	
BENZO(A)PYRENE	☐		☐ 0.0877		☐ 0.784	
CHRYSENE	☐		☐ 87.7		☐ 7.2	
DIBENZO(A,H)ANTHRACENE	☐		☐ 0.0877		☐ 0.784	
FLUORANTHENE	☐		☐ 156[b]		☐ 156	
FLUORENE	☐		☐ 247[b]		☐ 247	
INDENO(1,2,3-CD)PYRENE	☐		☐ 0.877		☐ 7.84	
NAPHTHALENE	☐		☐ 782[b]		☐ 782	
PYRENE	☐		☐ 99[b]		☐ 99	
OTHER	☐		☐		☐	
OTHER	☐		☐		☐	

a Written statements, institutional controls must be provided that impermeable surfaces will be maintained.

b Maximum concentration based on pure product saturation limits.

LPST ID: 104626

PLAN A EVALUATION

EQUILIBRIUM PARTITION EQUATION

- Use this section to determine the target soil concentrations protective of groundwater (C_T).

The C_T value may be calculated for each chemical of concern under the following conditions:

- the option is provided on the appropriate column of the site specific category worksheet;
- default target concentration was exceeded;
- site specific soil parameters have been collected.

- Provide all calculations for each chemical of concern.

PARAMETERS	REFERENCE VALUES USED TO CALCULATE DEFAULT TARGET CONCENTRATION	SITE SPECIFIC VALUES
C_w = Category I groundwater target concentration (chemical specific) (mg/ℓ)	*Reference worksheet 11.1 for chemical specific category I target concentration.*	
ρ_s = Dry Soil bulk density (g-soil/cm^3-soil)	1.8	
θ_w = Water content (cm^3-H_2O/cm^3-soil)	0.1	
θa = Air content (cm^3-air/cm^3-soil)	0.22	
f_{oc} = Faction of organic carbon (g-C/g-soil)	0.002	
K_{oc} = Carbon-Water sorption coefficient (chemical specific) (g-H_2O/g-soil)	*Reference RG-36, page 55, Table B-1 for chemical specific values.*	
K_d = Soil-Water sorption coefficient = $K_{oc} \times f_{oc}$		
H′ = Unitless form of Henry's law constant H x 41.57 (at 25°C)	*Reference RG-36 page 55*	
C_l = Leachate Concentration Dilution Factor = 100	= Dilution Factor x C_W	

Use this equation to determine the target soil concentration which is protective of groundwater for each chemical of concern. Use site specific geotechnical parameters to calculate C_T. (Use referenced default values for any parameters not analyzed.)

C_T = Target soil concentration protective of groundwater determined by the equilibrium partition equation

$$C_T = \frac{\left(C_l \times \left[\rho_s K_d + \theta_w + \theta_a H'\right]\right)}{\rho_s}$$

LPST ID: 104626

SITE PRIORITIZATION

PRIORITY 1 SITES

NAPL present? ☐ yes ☐ no Evaluate all information on site soils, vapors, groundwater, surface water, and other impacts and check all boxes which match site conditions. The lowest value is the site priority. If priority cannot be determined, the assessment is inadequate.

	PRIORITY	ACTIONS
☐ 1.1	Explosive levels, or concentrations of vapors that could cause acute health effects are present in a residence or other building. (Ensure the local fire authority or State Fire Marshal (512/918-7100) and the local TNRCC Region Office have been notified.)	**Emergency Actions:** Notify appropriate authorities, property owners, and potentially affected parties. Mitigate vapor impact. **Additional Actions:** Conduct receptor survey. Conduct assessment of contaminant plumes. Determine target cleanup levels. Conduct remediation as necessary.
☐ 1.2	An active public water supply well, public water supply line, or public surface water intake is affected or immediately threatened by the release. (Ensure the public authority and the local TNRCC Region Office have been notified.)	**Emergency Actions:** Notify appropriate authorities, well users, and property owners. Prevent further migration. Mitigate impact. Discontinue use of water supply. **Additional Actions:** Provide alternative water source†. Conduct receptor survey. Conduct assessment of contaminant plumes in relation to water supply impact. Determine target cleanup levels. Conduct remediation as necessary.
☐ 1.3	A sole-source domestic water supply well or line, or sole-source domestic surface water intake is affected or immediately threatened by the release. (Ensure the well user or surface water user and the local TNRCC Region Office have been notified.)	**Emergency Actions:** Notify appropriate authorities, well users, and property owners. Prevent further migration. Mitigate impact. Discontinue use of water supply. **Additional Actions:** Provide alternative water source†. Conduct receptor survey. Conduct assessment of contaminant plumes in relation to water supply impact. Determine target cleanup levels. Conduct remediation as necessary.
☐ 1.4	Explosive vapors are present in a subsurface utility system, but no building or residence is affected. (Ensure the utility authority and the local TNRCC Region Office have been notified.)	**Emergency Actions:** Notify appropriate authorities, property owners, and affected parties. Mitigate vapor impact. **Additional Actions:** Conduct receptor survey. Conduct assessment of contaminant plumes. Determine target cleanup levels. Conduct remediation as necessary.
☐ 1.5	NAPL is present at the ground surface, on surface water bodies, surface water runoff, or in utilities other than water supply lines. (Ensure the utility authority is notified if utilities are affected. Ensure NAPL is removed as required pursuant to 30 TAC 334.79.)	**Emergency Actions:** Notify appropriate authorities, property owners, and affected parties. Secure area. **Additional Actions:** Conduct NAPL removal activities. Prevent migration of NAPL. Conduct assessment in relation to impact. Conduct receptor survey. Determine target cleanup levels. Conduct remediation as necessary.
☐ 1.6	The Edwards aquifer, recharge zone or transition zone is affected.	**Emergency Actions:** Recover NAPL if present. **Additional Actions:** Initiate assessment activities. Conduct assessment in relation to impact. Conduct receptor survey. Determine target cleanup levels. Conduct remediation as necessary. If NAPL is present, conduct removal activities.
☐ 1.7	Concentrations of vapors/particulates that could cause acute health affects, or safety concerns are present in outdoor air.	**Emergency Actions:** Notify appropriate authorities, property owners, and affected parties. Mitigate immediate impacts. **Additional Actions:** Conduct sufficient assessment to determine exposure pathways, receptors and their locations, and target cleanup goals. If NAPL is present, conduct removal activities.

† Reimbursement is contingent upon 30 TAC 334.308 (c)(3).

LPST ID: 104626

PRIORITY 2 SITES

	PRIORITY	ACTIONS
☐ 2.1	Soils or water contaminated by the release are exposed and unsecured from public access and dwellings, playgrounds, parks, day care centers, schools, or similar use facilities are located within 500 feet of those soils.	Remove, cover, or otherwise secure exposed soils or water. Fill open excavations. Conduct actions necessary to contain contamination or prevent impact or exposure.
☐ 2.2	A former vapor impact is associated with this site, or NAPL is present in close proximity to subsurface utilities or other natural or man-made conduit and there is potential for the accumulation of explosive vapors or vapors that could cause acute effects in a building or other structure.	Remediate/remove vapors, NAPL, or contaminated soils. Determine migration pathways and remove/prevent migration pathways. Conduct assessment of contaminant plumes in relation to the potential vapor pathway. Determine target cleanup levels. Conduct actions necessary to contain contamination or prevent impact or exposure.
☐ 2.3	A domestic water supply well or line, or a domestic surface water intake is affected or immediately threatened by the release, but the user has access to another public or private water supply. (Ensure the user and the local TNRCC Region Office have been notified.)	Notify proper authorities, users, and property owners. Prevent migration to water intake. Provide alternative water supply if necessary. Conduct assessment to identify contaminant plumes and exposure pathways in relation to water intake. Determine appropriate target cleanup goals based on site conditions. Conduct actions necessary to contain contamination or prevent impact or exposure.
☐ 2.4	A non-public or non-domestic water supply well is affected or immediately threatened. (Do not consider monitor wells.) (Ensure the user and the local TNRCC Region Office have been notified.)	Notify proper authorities, well users, and property owners. Prevent migration to water well. Provide alternative water supply if necessary. Plug water well if necessary. Conduct assessment to identify contaminant plumes and exposure pathways in relation to water well. Determine appropriate target cleanup goals based on site conditions. Conduct actions necessary to contain contamination or prevent impact or exposure.
☐ 2.5[1]	Groundwater is affected and a public or domestic water supply well is located within 0.25 miles of the UST/AST system or source area. (Check if a well is present, but the well use is unknown). (See footnote 1 before responding.)	Determine completion data and usage of well(s) if not already known. Conduct receptor survey to locate additional wells and other potential receptors (if not already done). Evaluate well impact potential. Determine appropriate cleanup goals based on site conditions. Conduct actions necessary to contain contamination or prevent impact or exposure.
☐ 2.6	Groundwater or storm water runoff is affected and discharges within 500 feet of the known extent of contamination to a surface water body used for human drinking water, contact recreation, habitat to a protected or listed endangered plant and animal species.	Conduct assessment which addresses the contaminant plumes in relation to the surface water. Determine target cleanup levels. Conduct actions necessary to contain contamination or prevent impact or exposure. Notify property owners if impact is documented.
☐ 2.7	A public or domestic water supply well that produces from a groundwater zone which is not affected or threatened is located within the known extent of contamination. (Check if a well is present, but the well use is unknown.)	Notify well users and property owners. Determine completion data and usage of water well(s). Conduct receptor survey to locate additional sensitive receptors. Investigate well impact or cross-contamination potential. Plug well(s) if necessary. Determine target cleanup levels. Conduct actions necessary to contain contamination or prevent impact or exposure. Monitor water well for groundwater quality.

LPST ID: 104626

PRIORITY 3 SITES

	PRIORITY	ACTIONS
☐ 3.1[1]	Groundwater is affected and a public or domestic water supply well is located between 0.25 and 0.5 miles from the UST/AST system or source area. (Check if a well is present in this interval, but the well use is unknown.) (See footnote 1 before responding.)	Determine completion data and usage of well(s) if not already known. Conduct receptor survey to locate additional wells and other potential receptors (if not already done). Evaluate well impact potential. Evaluate need for remediation.
☐ 3.2	Groundwater is affected and the affected groundwater zone may discharge between 500 feet and 0.25 miles of the UST/AST or source area to a surface water body used for human drinking water, contact recreation, or habitat to a protected or listed endangered plant and animal species.	Conduct assessment which evaluates potential to impact the surface water. Evaluate need for remediation.
☐ 3.3[1]	Groundwater is affected and a non-public or non-domestic water supply well is located within 0.25 miles of the UST/AST system or source area. (See footnote 1 before responding.)	Determine completion data and usage of well(s) if not already known. Conduct receptor survey to locate additional wells and other potential receptors (if not already done). Monitor water well for groundwater quality. Evaluate need for remediation.
☐ 3.4	A non-community or non-domestic water supply well that produces from a groundwater zone which is not affected or threatened is located within the known extent of contamination. (If a well is present, but the use of the well is unknown, check 2.7 instead.)	Notify well users and property owners. Determine completion data and usage of well(s) if not already known. Conduct receptor survey to locate additional wells and other potential receptors (if not already done). Investigate well impact or cross-contamination potential. Monitor water well for groundwater quality. Evaluate need for remediation.
☐ 3.5[2]	A designated major or minor groundwater aquifer is affected or immediately threatened. (See footnote 2 before responding.)	Conduct assessment of soil and groundwater contaminant plumes in relation to major or minor aquifer. Conduct receptor survey and water well inventory. Evaluate need for remediation.

PRIORITY 4 SITES

	PRIORITY	ACTIONS
☐ 4.1	Groundwater is affected.	Conduct assessment of soil and groundwater contaminant plumes. Conduct receptor survey and water well inventory. Evaluate site conditions to determine need for additional corrective actions.
■ 4.2	The vertical extent of contamination has been defined and the assessment results document that groundwater is not affected.	Conduct assessment of soil contaminant plume. Conduct receptor survey and water well inventory. Evaluate site conditions to determine need for additional corrective actions.

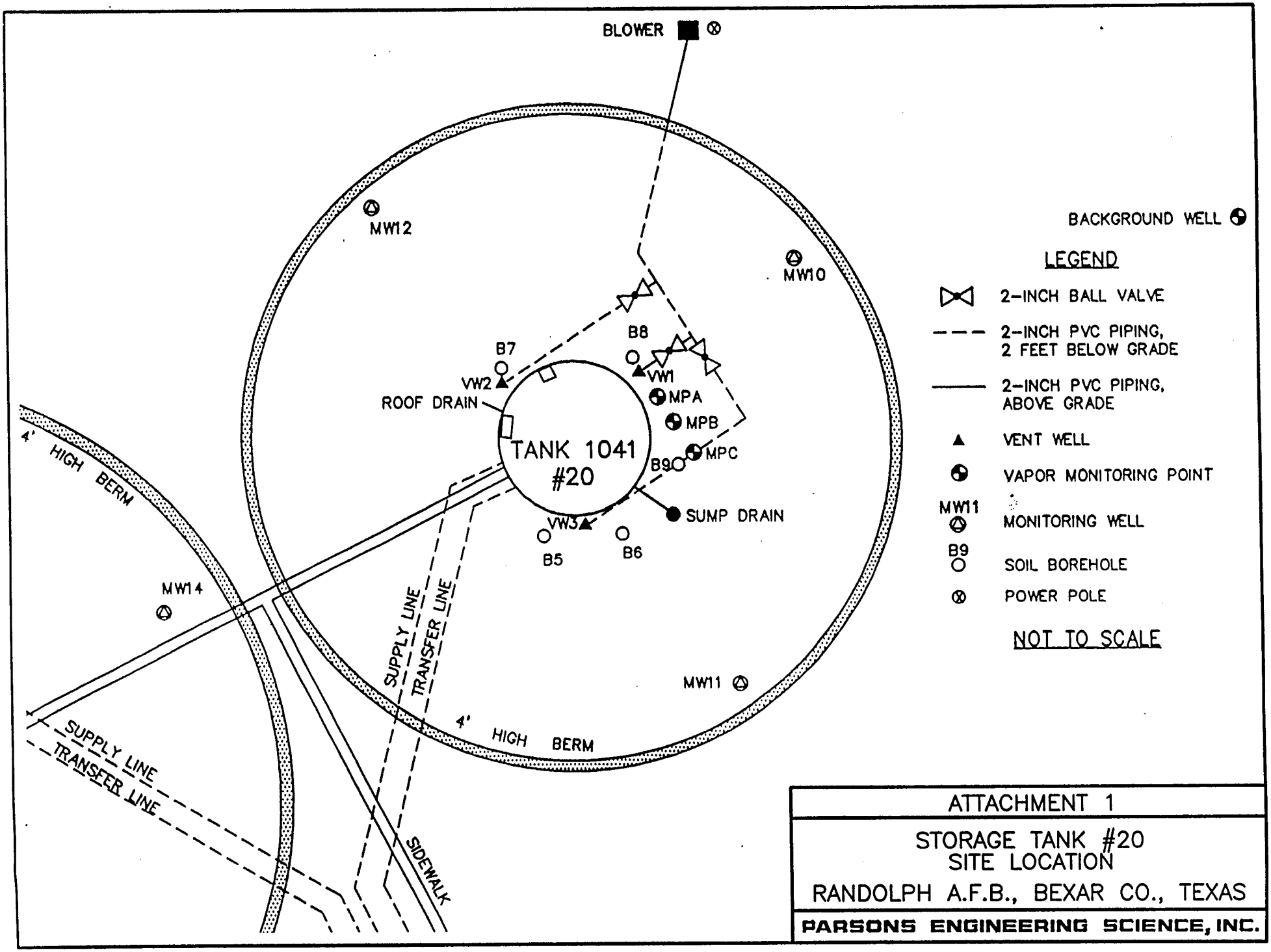
1. Consider only wells producing from the same interval as the affected groundwater zone at the release site, wells which may provide a cross-contamination pathway, or wells where completion details are unknown.

2. Refer to Major and Minor Aquifers of Texas Maps prepared by Texas Water Development Board, September 1990. Do not consider the low permeability Beaumont clays of the Beaumont Formation for the Gulf Coast aquifer. Do not consider a perched groundwater zone overlaying the principal producing portion of the aquifer unless the two are hydrologically connected.

Abbreviations	Definition
%	percent
AST	Aboveground Storage Tank
AV	aviation
BGS	below ground surface
C	celius
CAP	corrective action plan
CAT.	category
CH_4	methane
cm	cubic centimeter
cm^2/cm^2	square centimeter per square centimeter
CO_2	carbon dioxide
coml.	commercial
conc.	concentration
cont.	continue
EPA	Environmental Protection Agency
Fe	iron
ft.	feet
$ft.^2$	square feet
gal.	gallons
g/g	gram per gram
g/m^3	gram per cubic meter
gpd	gallons per day
ID	identification
in.	inches
Lab.	laboratory
LPST	Leaking Petroleum Storage Tank
LSA	Limited Site Assessment
Max.	maximum
MCL	maximum contaminant level
mg/kg	milligram per kilogram
mg/ℓ	milligram per liter
NAPL	non-aqueous phase liquids
No.	number
O_2	oxygen
ppm	parts per million
PST	Petroleum Storage Tank
RP	Responsible Party
RPR	Responsible Party Remediation
TAC	Texas Administrative Code
TEX	toluene, ethylbenzene, and total xylenes
TNRCC	Texas Natural Resource Conservation Commission
TPH	total petroleum hydrocarbons
UST	Underground Storage Tank

ATTACHMENT 1

Site Plan



ATTACHMENT 1

STORAGE TANK #20
SITE LOCATION
RANDOLPH A.F.B., BEXAR CO., TEXAS

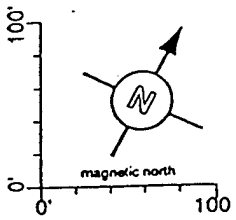
PARSONS ENGINEERING SCIENCE, INC.

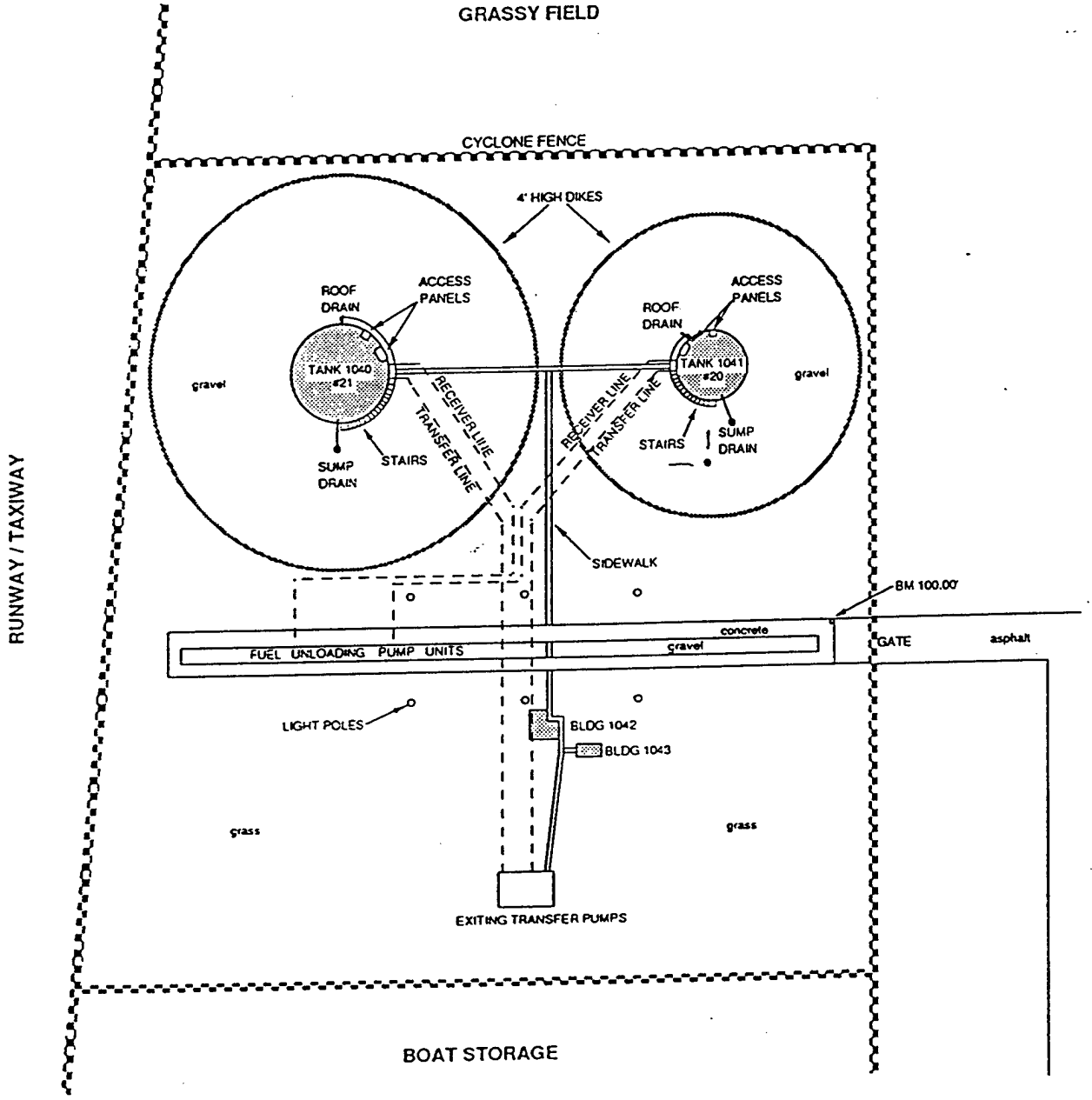
ATTACHMENT 1A

Site Location

ABOVE GROUND STORAGE TANKS:

tanks	vol (gal)	type	dim (ft)
#20	420,000	JP-4	32 X 50
#21	840,000	JP-4	32 X 66





ATTACHMENT 1 A

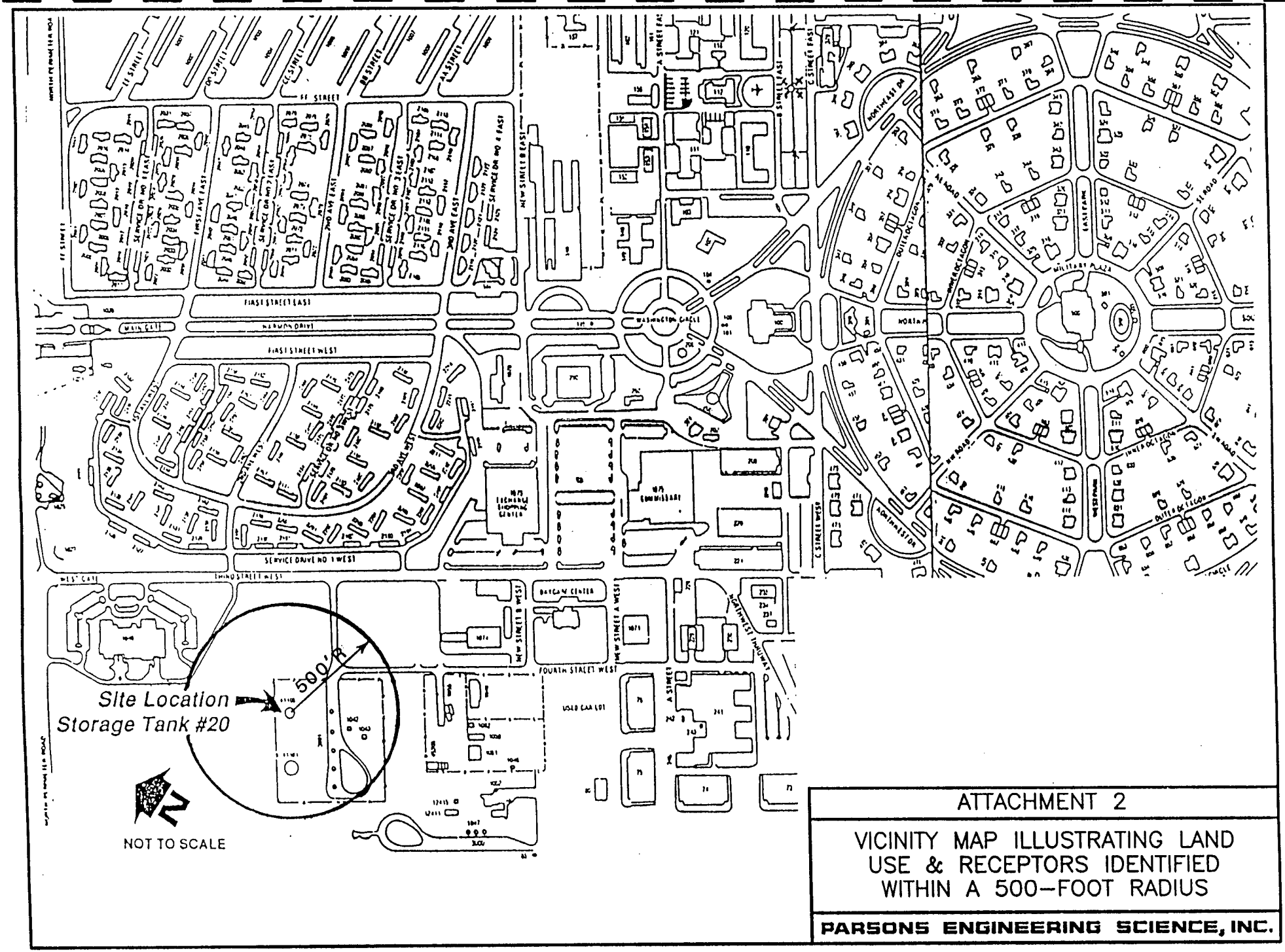
SITE LOCATION MAP

RANDOLPH A.F.B., BEXAR CO., TEXAS

PARSONS ENGINEERING SCIENCE, INC.

ATTACHMENT 2

Vicinity Map Illustrating Land Use & Receptors Identified Within a 500-Foot Radius



ATTACHMENT 2

VICINITY MAP ILLUSTRATING LAND USE & RECEPTORS IDENTIFIED WITHIN A 500–FOOT RADIUS

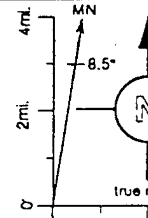
PARSONS ENGINEERING SCIENCE, INC.

ATTACHMENT 2A

Geologic Map

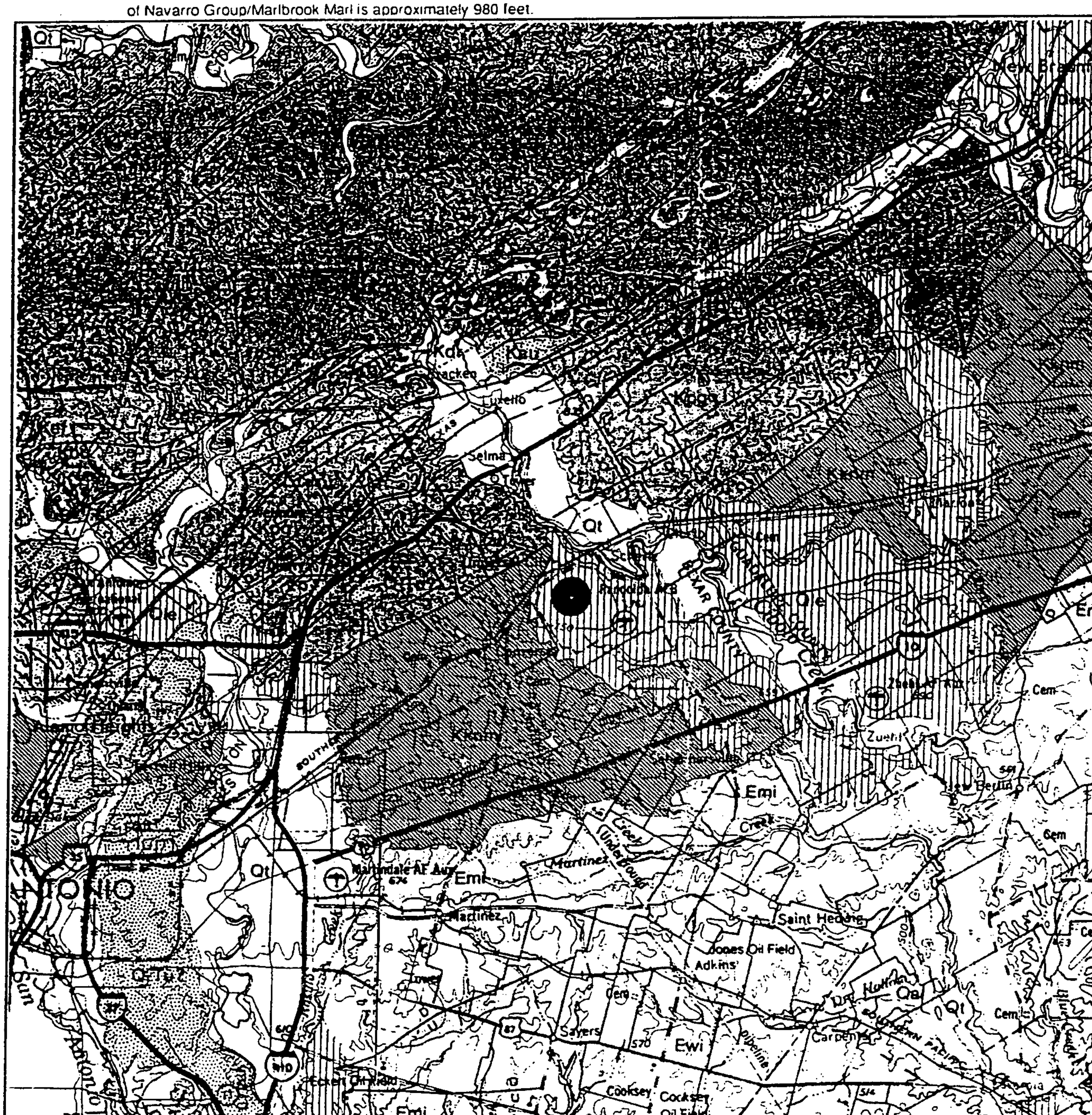
reproduced from:
GEOLOGIC ATLAS OF TEXAS, SAN ANTONIO SHEET-1983
THE UNIVERSITY OF TEXAS AT AUSTIN: BUREAU OF ECONOMIC GEOLOGY
1 X 2 degree series
CONTOUR INTERVAL 50 FEET

● -SITE LOCATION



MAJOR OR MINOR AQUIFER - EDWARDS AQUIFER (SALINE ZONE)

GEOLOGY- LEONA FORMATION, Ole, composed of fine calcareous silt grading down into course gravel These deposits are underlain by the NAV GROUP and MARLBROOK MARL, Kknm, which is composed of marl, clay, sandstone and siltstone. The marl and clay are glauconitic and concretions of limonite and siderite; sandstone is find grained, has little lateral continuity and becomes more abundant westward. Total thi of Navarro Group/Marlbrook Marl is approximately 980 feet.



ATTACHMENT 2A

GEOLOGIC MAP

RANDOLPH A.F.B., BEXAR CO., T

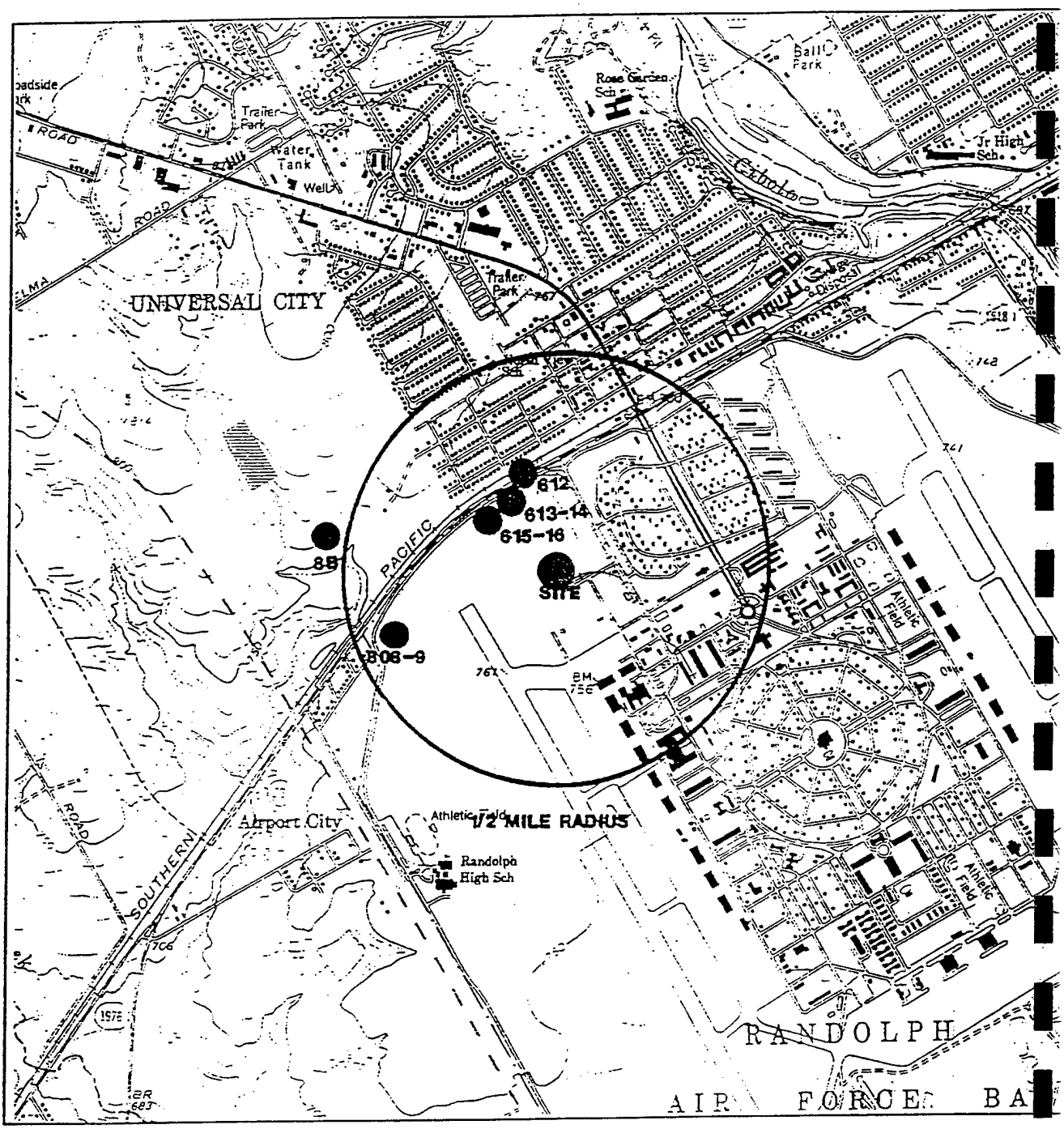
PARSONS ENGINEERING SCIENC

ATTACHMENT 3

Water Well Location Map

reproduced from:
SCHERTZ QUADRANGLE MAP-1973
TEXAS--BEXAR COUNTY
7.5 minute USGS series
CONTOUR INTERVAL 10 FEET

- SITE LOCATION (UTM: 3267.68 N, 568.73 E)
(LAT: 29° 32' 17.7" N; LONG: 98° 17' 26.6" W)
SITE ELEVATION=758' MSL



ATTACHMENT 3

WATER WELL
LOCATION MAP

RANDOLPH A.F.B., BEXAR CO.,

PARSONS ENGINEERING SCIENCE

ATTACHMENT 4

Copies of completion details and water well drillers reports for located wells within a 0.5 mile radius

Agency Information Consultants, Inc.
P.O. Box 2181 Austin, Texas 78768-2181 Tel. (512) 478-8991 Fax. (512) 478-5215

September 25, 1992

Mr. Steve Veltri
Extra Engineer, Inc.
638-D West Rhapsody
San Antonio, Texas 78216

Re: AIC #02-0007977
1/2 Mile Water Well Search
Randolph AFB
Bexar County, Texas

Dear Mr. Veltri,

Agency Information Consultants, Inc. (AIC) has performed a water well search within the area delineated on the attached map. The following steps were utilized by AIC for this project:

1. Transferred all "located" and "plotted" water well data from the (Texas Water Development Board) TWDB county highway maps onto the map provided by AIC within the Area Of Review (AOR).

2. Transferred all "located" water well data from the TWDB United States Geological Survey (USGS) 7.5 minute topographic maps within the AOR onto the map provided by AIC.

3. Obtained copies of the "located" and "plotted" water well schedules/logs for the water wells found within the AOR at the Texas Water Commission (TWC) central records.

4. Obtained copies of the water well logs for the "partially" numbered water wells which were found to be within the AOR.

The following is a brief explanation of terms:

Located water wells - wells whose sites have been verified in person by a TWDB or USGS staff member and spotted on a map at the TWDB.

Plotted water wells - wells whose sites have been determined from the information submitted on the water well logs and subsequently spotted on a TWDB county highway map by a TWDB staff member. Since June of 1986, the TWDB has stopped mapping these wells.

Partially numbered water wells - wells whose logs have been processed since June of 1986. These wells are given a State ID Number which establish it within a 2.5 minute quad.

AIC identified 9 water wells within your area of review. There are 7 located water wells, 1 plotted water well and 1 partially numbered water well. The following is a listing of the wells found.

LOCATED WATER WELLS
State ID Number
68-30-612
-613
-614
-615
-616
-808
-809

PLOTTED WATER WELLS
State ID Number
68-30-8B

PARTIALLY NUMBERED WATER WELLS
State ID Number
68-30-5(1) Location Unknown

Note: Frequently, there is more than one water well per State ID Number, due to a large concentration of wells. If greater than one, each State ID Number will be listed out to the right of the column. The records for wells which share a common State ID Number will be found stapled together.

AIC's research of water wells within the AOR was performed by an examination of the maps at the TWDB and the files within the TWC central records. Due to the fact that some water well schedules were never submitted by drillers and the unaccountability of privately drilled water wells, AIC is unable to provide 100% of the data in the AOR.

If you have any questions regarding this project or any future projects please call me at 512-478-8991.

Sincerely,

Joye Haun
Research Consultant

Enclosures

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Edwards | Field No. _____ | State Well No. 68-30-617

Owner's Well No. _____ | County Bexar

1. Location: ___ 1/4, ___ 1/4 Sec. ___, Block _____ Survey _____

2. Owner: S. P. Lairson Address: Peterson, Tex

Tenant: _____ Address: _____

Driller: _____ Address: _____

3. Elevation of _____ is 762.4 ft. above msl, determined by _____

4. Drilled: _____ 19 04; Dug, Cable Tool, Rotary, _____

5. Depth: Rept. 55+ ft. Meas. _____ ft. R-5608

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type T

No. Stages ___, Bowls Diam. ___ in., Setting ___ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel E Make & Model _____ HP.

9. Yield: Flow ___ gpm, Pump _____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test ___ Made by _____

Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From ___ ft. to ___

Diam. (in.)	Type	Setting from

11. Water Level: 95.39 ft. Rept. Meas. 19 above below which is ___ ft. above below

109.36 ft. Rept. Meas. 6-24 1948 above below which is ___ ft. above below

104.75 ft. Rept. Meas. 8-29 1949 above below which is ___ ft. above below

_____ ft. Rept. Meas. 19 above below which is ___ ft. above below

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding (Observation) Not Used. Historical Destroyed

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: (Driller's Log), Radioactivity Log, Electric Log, R-5608

Formation Samples, Pumping Test, _____

15. Record by: _____ Date _____ 19 ___

Source of Data _____

16. Remarks: WS-19 _____

Surface Obs Well Folder 1-1

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting from

(Sketch)

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

Texas Water Well Drille
P.O. Box 13087
Austin, Texas 787

1) **OWNER** Randolph Air Force Base (Name) **ADDRESS** Randolph A.F.B., SanAntonio, TX. 78 (Street or RFD) (City) (State)

2) **LOCATION OF WELL:** County Bexar _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an of Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):**
☐ Mud Rotary ☐ Air Hammer ☐ Jetted
☐ Air Rotary ☐ Cable Tool ☒ Other

6) **WELL LOG:** MW#10

Date Drilling: Started 9-16 19 92 Completed 9-16 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	25

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed XX Other 10-20 sand
If Gravel Packed give interval ... from 1.5 ft. to 17
bentonite 17-25 & bentonite 1

From (ft.)	To (ft.)	Description and color of formation material
0	2	dark brown clay
2	15	tan clayey silt w/cal deposit/trace limest.
15	19	tan silty clay
19	25	tan clay silt trace sand

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To
4	N	PVC riser	0	2
4	N	PVC screen	2	17

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 0 ft. to 0.5 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used hand
Cemented by JEDI

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level DRY ft. below land surface Date 9-1
Artesian flow _____ gpm. Date _____

12) **PACKERS:** Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I unc that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JEDI (Type or print) WELL DRILLER'S LICENSE NO. 2799M

ADDRESS P.O. BOX 18580, (Street or RFD) C.C., TX. (City) 78480 (State) (Zip)

(Signed) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _

WWD-012 (Rev. 05-18-90)

WELL OWNER'S COPY

S d original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Randolph Air Force Base (Name) ADDRESS Randolph A.F.B., San Antonio, TX. 78150 (Street or RFD) (City) (State) (Zip)

) LOCATION OF WELL: County Bexar . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

iller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official uarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

TYPE OF WORK (Check): ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): ☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

WELL LOG: Date Drilling: #14 Started 9-17 19 92 Completed 9-17 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	30

7) BOREHOLE COMPLETION: ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☒ Other 10-20 sand

If Gravel Packed give interval ... from 4 ft. to 30 ft. bentonite 3 - 4

From (ft.)	To (ft.)	Description and color of formation material
0	5	dark brown clay
5	12.5	tan clayey silt
12.5	15.5	tan sand silt
15.5	25.5	tan silt clay
25.5	26.5	gravel
26.5	30	gray & tan silt

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC riser	0	15	
4	N	PVC screen	15	30	.020

9) CEMENTING DATA [Rule 287.44(1)]

Cemented from 0 ft. to 3 ft. No. of Sacks Used 1

_____ ft. to _____ ft. No. of Sacks Used _____

Method used hand

Cemented by JEDI

TYPE PUMP: ☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____

Depth to pump bowls, cylinder, jet, etc., _____ ft.

10) SURFACE COMPLETION

☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]

☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]

☐ Pitless Adapter Used [Rule 287.44(3)(B)]

☐ Approved Alternative Procedure Used [Rule 287.71]

14) WELL TESTS: Type Test ☐ Pump ☐ Baller ☐ Jetted ☐ Estimated

Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL:

Static level DRY ft. below land surface Date 9-17-92

Artesian flow _____ gpm. Date _____

15) WATER QUALITY:

Did you knowingly penetrate any strata which contained undesirable constituents?

☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"

Type of water? _____ Depth of strata _____

Was a chemical analysis made? ☐ Yes ☒ No

12) PACKERS: Type Depth

_____

_____

reby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

ANY NAME JEDI (Type or print) WELL DRILLER'S LICENSE NO. 2799M

DRESS P.O. BOX 18580, (Street or RFD) C.C., TX (City) 78480 (State) (Zip)

) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

D-012 (Rev. 05-18-90)

WELL OWNER'S COPY

nd original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER Randolph Air Force Base (Name) ADDRESS Randolph A.F.B., SanAntonio, TX. 78150 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Bexar . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) WELL LOG: MW#11
Date Drilling: Started 9-17 1992 Completed 9-17 1992

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	17.5

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 10 - 20 sand
If Gravel Packed give interval ... from 3 ft. to 17.5 ft.
bentonite 2 - 3

From (ft.)	To (ft.)	Description and color of formation material
0	5	dark brown clay
5	7.5	tan clayey silt
7.5	10.5	tan clayey silt
10.5	17.5	gray & tan silt clay

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC riser	0	5	
4	N	PVC screen	5	17.5	.020

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 2 ft. No. of Sacks Used ½
_____ ft. to _____ ft. No. of Sacks Used _____
Method used hand
Cemented by JEDI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

11) WATER LEVEL:
Static level DRY ft. below land surface Date 9-17-92
Artesian flow _____ gpm. Date _____

14) WELL TESTS:
Type Test: ☐ Pump ☐ Baller ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

12) PACKERS: Type Depth

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JEDI (Type or print) WELL DRILLER'S LICENSE NO. 2799M

ADDRESS P.O. BOX 18580, (Street or RFD) C.C., TX. (City) 78480 (State) (Zip)

(Signed) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

-012 (Rev. 05-18-90)

WELL OWNER'S COPY

9-185
(July, 1918)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

68-30-612

Well Schedule

Date 10-[illegible], 19[illegible] Field No. [illegible]

Record by [illegible] Office No. [illegible]

1. Location: State Texas County [illegible]
   Quadrangle
   ¼ sec. T. N. S. R. E. W.
2. Owner [illegible] Railroad Address [illegible] Texas
   Driller Address
3. Topography
4. Altitude 762 ± ft. above
   below
5. Type: Dug, drilled, driven, bored
6. Depth [illegible] ft. Date 1904
7. Diameter: Top 8 Bottom
8. Chief Aquifer Edwards
   From 104.75 - 8-29-49 [illegible] Others
9. Casing: Type Depth ft. Diam to
   Finish [illegible]
   109.36 - 6-[illegible] above [illegible]
10. Water level 95.39 ft. below [illegible]
11. Pump: Type [illegible] Capacity [illegible] G. M.
    Power: Kind [illegible] Horsepower
12. Yield: Flow G. M. Pump G. M. Meas., Rept.
    Drawdown ft.; pumping G. M.; time
13. Use: Dom., Stock, PS., RR., Ind., DW., Irr. [illegible] Quantity
    Adequacy, permanence
14. Quality: Good, fair, bad Sample Yes
    [illegible] No
    Taste, odor, color Temp. °F
    Unfit for
    Sanitation
15. Cost: Well, $; Plant (well, pump, power, etc.), $
    Operating, $ per mo.

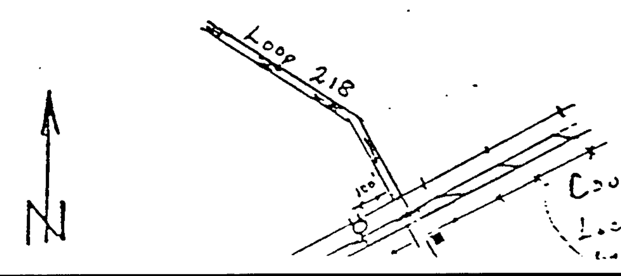
Log, analysis, authority [illegible] 68-30-[illegible]

4h

05

L. in 5603

[illegible]troyed



Could not locate well took
Location as described on basis of [illegible]
[illegible] Paul Rettman (U.S.G.S.)
68-30-612

Well is near entrance to Randolph field. Well has not been used in over a month an account of condition of the elevated tank.

5-23-73 (PLR) Can't locate - Boat Report says well is owned and Randolph has easement To Pump water. Best location may be 100' East of RR Track and at the RR/Tex Hwy property line.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Edwards Field No. [illegible] State Well No. 62-33-613

Owner's Well No. [illegible] County Reeves

1. Location: [illegible] 1/4, [illegible] 1/4 Sec. [illegible], Block [illegible] Survey [illegible]

2. Owner: Pecos [illegible] Address: [illegible]

Tenant: [illegible] Address: [illegible]

Driller: J P Rea Exploration Address: [illegible]

3. Elevation of [illegible] is 252 ft. above msl, determined by Topo

4. Drilled: [illegible] 19 [illegible]; Dug, Cable Tool, Rotary, [illegible]

5. Depth: Rept. 725 ft. Meas. [illegible] ft.

6. Completion: Open Hole, (Straight Wall), Underreamed, Gravel Packed [illegible]

7. Pump: Mfgr. Pomeroy Type [illegible]

No. Stages 9, Bowls Diam. 10" in., Setting 2[illegible] ft.

Column Diam. 6" in., Length Tailpipe [illegible] ft.

8. Motor: Fuel [illegible] Make & Model [illegible] HP. 40

9. Yield: Flow [illegible] gpm, Pump 450 gpm, Meas., Rept., Est. [illegible]

10. Performance Test: Date [illegible] Length of Test [illegible] Made by [illegible]

Static Level [illegible] ft. Pumping Level [illegible] ft. Drawdown [illegible] ft.

Production [illegible] gpm Specific Capacity [illegible] gpm/ft.

CASING & BLANK PIPE

Cemented From [illegible] ft. to [illegible] ft.

Diam. (in.)	Type	Setting, ft. from	to
12	Steel	0	423

11. Water Level: [illegible] ft. rept. meas. [illegible] 19[illegible] above below [illegible] which is [illegible] ft. above below surface.

[illegible] ft. rept. meas. [illegible] 19[illegible] above below [illegible] which is [illegible] ft. above below surface.

[illegible] ft. rept. meas. [illegible] 19[illegible] above below [illegible] which is [illegible] ft. above below surface.

[illegible] ft. rept. meas. [illegible] 19[illegible] above below [illegible] which is [illegible] ft. above below surface.

12. Use: Dom., Stock, (Public Supply), Ind., Irr., Waterflooding, Observation, Not Used. [illegible]

13. Quality: (Remarks on taste, odor, color, etc.) [illegible]

Temp. [illegible] °F, Date sampled for analysis [illegible] Laboratory USGS

Temp. [illegible] °F, Date sampled for analysis [illegible] Laboratory [illegible]

Temp. [illegible] °F, Date sampled for analysis [illegible] Laboratory [illegible]

14. Other data available as circled: (Driller's Log), Radioactivity Log, Electric Log, [illegible]

Formation Samples, Pumping Test, [illegible]

15. Record by: G. Mendenhall Date 6-11 1975

Source of Data Data from files [illegible]

16. Remarks: [illegible]

WELL SCREEN

Screen Openings [illegible]

Diam. (in.)	Type	Setting, ft. from	to

Sec - 33-52

(Sketch)

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer [illegible] Field No. 6-12 State Well No. 62-20-614

Owner's Well No. #2 County [illegible]

1. Location: ___ 1/4, ___ 1/4 Sec. ___, Block ___ Survey ___

2. Owner: [illegible] Address: ___

Tenant: ___ Address: ___

Driller: [illegible] Address: ___

3. Elevation of ___ is 757 ft. above msl, determined by ___

4. Drilled: ___ 19 62; Dug, Cable Tool, Rotary, ___

5. Depth: Rept. 540 ft. Meas. ___ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed ___

7. Pump: Mfgr. Layne Type [illegible]

No. Stages 6, Bowls Diam. 12 in., Setting 240 ft.

Column Diam. 8" in., Length Tailpipe ___ ft.

8. Motor: Fuel Elec. Make & Model [illegible] HP. 100

9. Yield: Flow ___ gpm, Pump 325 gpm, Meas., Rept., Est. ___

10. Performance Test: Date ___ Length of Test ___ Made by ___

Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft.

Production ___ gpm Specific Capacity ___ gpm/ft.

CASING & BLANK PIPE

Cemented From ___ ft. to ___ f

Diam. (in.)	Type	Setting, from	
13⅜	S-cc	0	42

11. Water Level: ___ ft. rept. meas. ___ 19___ above below ___ which is ___ ft. above below su

___ ft. rept. meas. ___ 19___ above below ___ which is ___ ft. above below su

___ ft. rept. meas. ___ 19___ above below ___ which is ___ ft. above below su

___ ft. rept. meas. ___ 19___ above below ___ which is ___ ft. above below su

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, ___

13. Quality: (Remarks on taste, odor, color, etc.) ___

Temp. ___ °F, Date sampled for analysis ___ Laboratory ___

Temp. ___ °F, Date sampled for analysis ___ Laboratory ___

Temp. ___ °F, Date sampled for analysis ___ Laboratory ___

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, 1/25/62

Formation Samples, Pumping Test, ___

15. Record by: [illegible] Date 6-11 19 75

Source of Data [illegible]

16. Remarks: ___

WELL SCREEN

Screen Openings ___

Diam. (in.)	Type	Setting, from	

Sec-20-208

(Sketch)

original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** Randolph Air Force Base (Name) **ADDRESS** Randolph A.F.B., San Antonio, TX. 78150 (Street or RFD) (City) (State) (Zip)

LOCATION OF WELL:
County Bexar . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____
☒ **SEE ATTACHED MAP**

2) **TYPE OF WORK (Check):**
☐ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial XX Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

3) **WELL LOG:** MW#12
Date Drilling: Started 9-17 1992 Completed 9-17 1992

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	17.5

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 10-20 sand
If Gravel Packed give interval ... from 3 ft. to 17.5 ft.
bentonite 2 - 3

From (ft.)	To (ft.)	Description and color of formation material
0	5.5	dark brown clay
5.5	10.5	tan silt w/gravel
10.5	12.5	tan silt clay w/ caliche
12.5	17.5	dark tan silt clay

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC riser	+0	5	
4	N	PVC screen	5	17.5	.020

(Use reverse side if necessary)

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 0 ft. to 2 ft. No. of Sacks Used ½
_____ ft. to _____ ft. No. of Sacks Used _____
Method used hand
Cemented by JEDI

TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) **WATER LEVEL:**
Static level DRY ft. below land surface Date 9-17-92
Artesian flow _____ gpm. Date _____

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

12) **PACKERS:** Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JEDI (Type or print) **WELL DRILLER'S LICENSE NO.** 2799M

ADDRESS P.O. BOX 18580, (Street or RFD) C.C., TX. (City) 78480 (State) (Zip)

16) _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WR-012 (Rev. 05-18-90)

WELL OWNER'S COPY

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please [illegible]

Texas Water Well Drille
P.O. Box 13087
Austin, Texas [illegible]

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

1) OWNER Randolph Air Force Base (Name) ADDRESS Randolph A.F.B.,SanAntonio,TX. 78 (Street or RFD) (City) (State)

2) LOCATION OF WELL: County Bexar _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on a [illegible] Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Mud Rotary ☐ Air Hammer ☐ Jet ☐ Air Rotary ☐ Cable Tool ☒ Other

6) WELL LOG: MW#13
Date Drilling: Started 9-17 19 92 Completed 9-17 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	27.5

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreame
☐ Gravel Packed ☒ Other 10-20 sand
If Gravel Packed give interval . . . from 6 ft. to 27.
bentonite 5 - 6

From (ft.)	To (ft.)	Description and color of formation material
0	5	dark brown clay
5	12.5	tan silt
12.5	20.5	tan sand silt w/ gravel
20.5	27.5	gray & tan gray silt

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	To
4	N	PVC risers	0	7
4	N	PVC screen	7	27.5

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 5 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used hand
Cemented by JEDI

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL:
Static level 20 ft. below land surface Date 9-
Artesian flow _____ gpm. Date _____

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

12) PACKERS: Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I ur that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JEDI (Type or print) WELL DRILLER'S LICENSE NO. 2799M

ADDRESS P.O. BOX 18580, (Street or RFD) C.C.,TX. (City) 78480 (State) (Zip)

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on m

WWD-012 (Rev. 05-18-90)

WELL OWNER'S COPY

S[illegible] original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** — *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER Randolph Air Force Base (Name) ADDRESS Randolph A.F.B., San Antonio, TX. 78150 (Street or RFD) (City) (State) (Zip)

LOCATION OF WELL:
County Bexar , _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

2. ☒ SEE ATTACHED MAP

TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

WELL LOG:
Date Drilling: #14
Started 9-17 1992
Completed 9-17 1992

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8	Surface	30

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 10-20 sand
If Gravel Packed give interval ... from 4 ft. to 30 ft.
bentonite 3 - 4

From (ft.)	To (ft.)	Description and color of formation material
0	5	dark brown clay
5	12.5	tan clayey silt
12.5	15.5	tan sand silt
15.5	25.5	tan silt clay
25.5	26.5	gravel
26.5	30	gray & tan silt

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC riser	0	15	
4	N	PVC screen	15	30	.020

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 3 ft. No. of Sacks Used 1
_____ ft. to _____ ft. No. of Sacks Used _____
Method used hand
Cemented by JEDI

TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL:
Static level DRY ft. below land surface Date 9-17-92
Artesian flow _____ gpm. Date _____

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

12) PACKERS: Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JEDI (Type or print) WELL DRILLER'S LICENSE NO. 2799M

ADDRESS P.O. BOX 18580, (Street or RFD) C.C., TX (City) 78480 (State) (Zip)

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWD-012 (Rev. 05-18-90)

WELL OWNER'S COPY

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please ...e

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Extra Engineer

Texas Water Well Drill...
P.O. Box 1308
Austin, Texas ...8

1) **OWNER** Randolph Air Force Base (Name) **ADDRESS** Randolph A.F.B., SanAntonio, TX. 78 (Street or RFD) (City) (State)

2) **LOCATION OF WELL:**
County Bexar _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on a ...c Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):**
☐ Mud Rotary ☐ Air Hammer ☐ Je...d
☐ Air Rotary ☐ Cable Tool ☒ Other

6) **WELL LOG:** MW#10
Date Drilling:
Started 9-16 19 92
Completed 9-16 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	25

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underream...
☐ Gravel Packed XX Other 10-20 sand
If Gravel Packed give interval ... from 1.5 ft. to 17
bentonite 17-25 & bentonite ...

From (ft.)	To (ft.)	Description and color of formation material
0	2	dark brown clay
2	15	tan clayey silt w/cal deposit/trace limest.
15	19	tan silty clay
19	25	tan clay silt trace sand

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	To
4	N	PVC riser	0	2
4	N	PVC screen	2	17

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 0 ft. to 0.5 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used hand
Cemented by JEDI

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level DRY ft. below land surface Date 9-1...
Artesian flow _____ gpm. Date _____

12) **PACKERS:** Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes XX No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I un... that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JEDI (Type or print) WELL DRILLER'S LICENSE NO. 2799M

ADDRESS P.O. BOX 18580, (Street or RFD) C.C., TX. (City) 78480 (State) (Zi...

Signed _____ (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

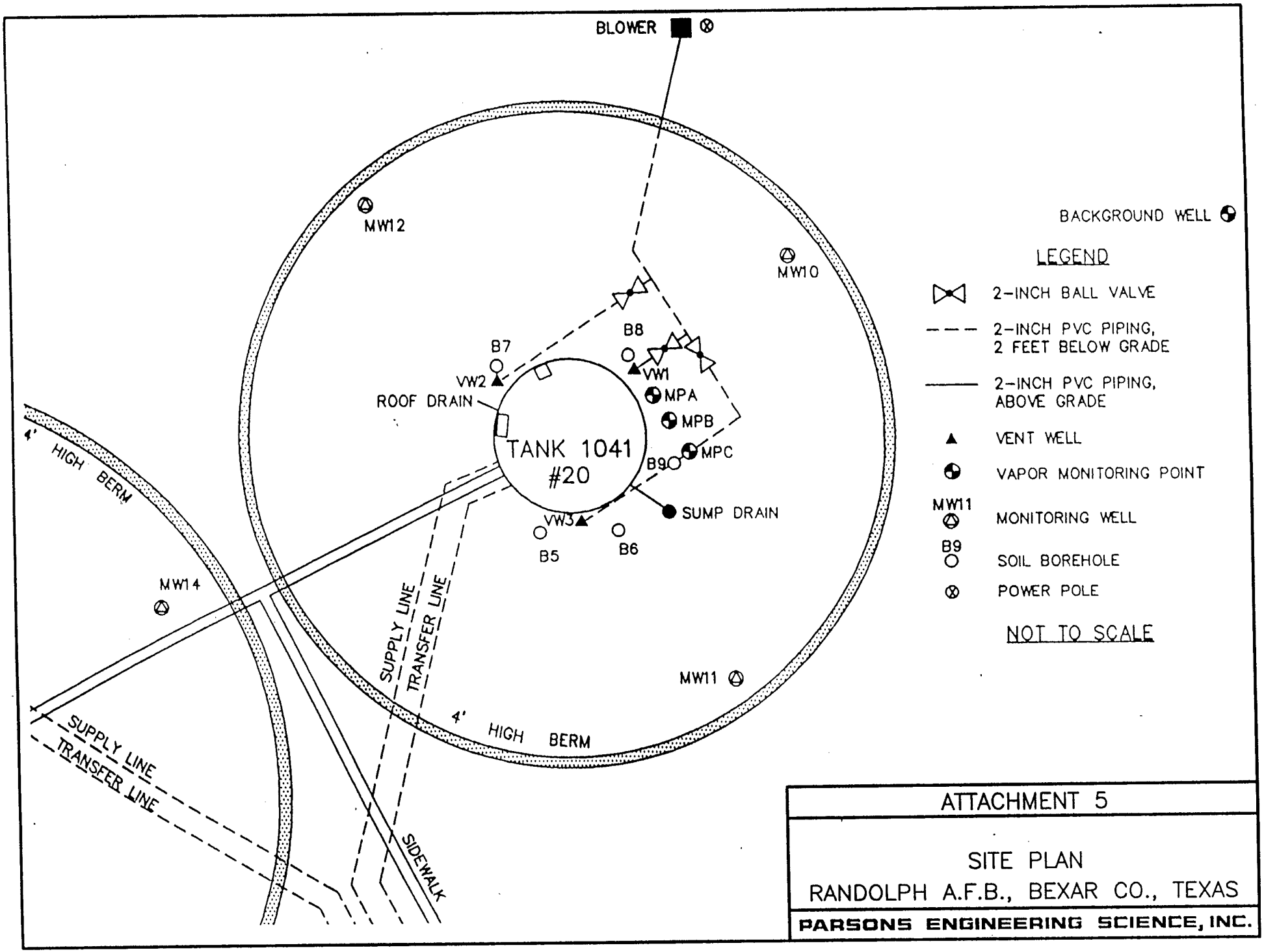
For TWC use only: Well No. _____ Located on ma...

WWD-012 (Rev. 05-18-90)

WELL OWNER'S COPY

ATTACHMENT 5

Site Plan



ATTACHMENT 5

SITE PLAN
RANDOLPH A.F.B., BEXAR CO., TEXAS

PARSONS ENGINEERING SCIENCE, INC.

ATTACHMENT 6

Soil Contaminant Concentration

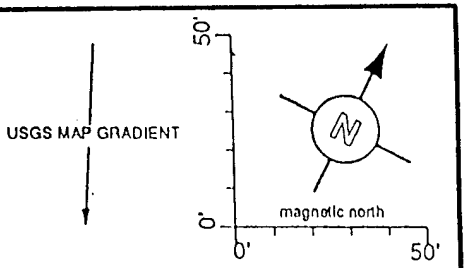
Map in 9-92

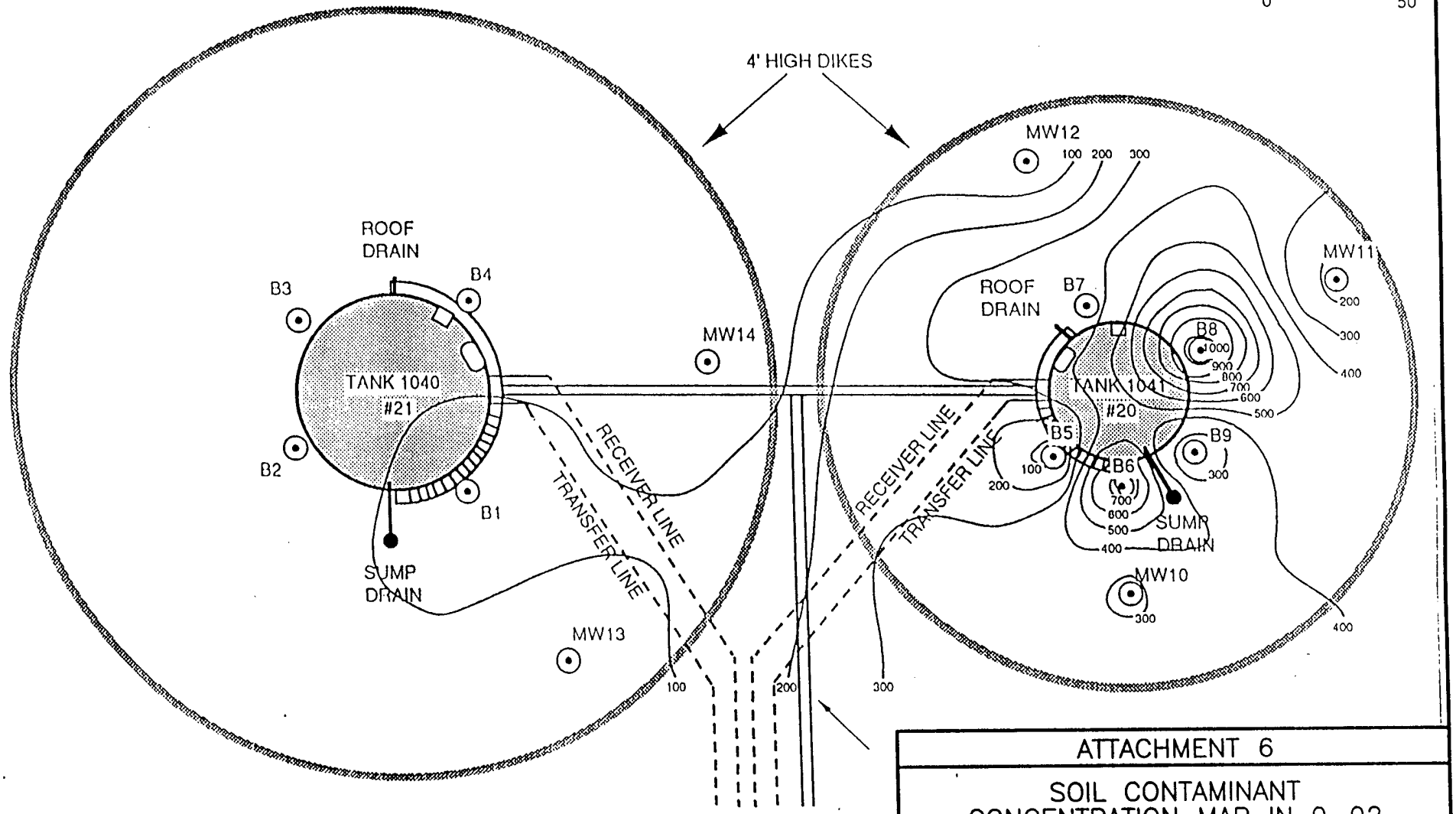
ABOVE GROUND STORAGE TANKS:

tanks	vol (gal)	type	dim (ft)
#20	420,000	JP-4	32 X 50
#21	840,000	JP-4	32 X 66

⊙ — boring/sample locations

—— TPH concentrations (ppm)
(based on maximum TPH encountered, regardless of depth)





ATTACHMENT 6

SOIL CONTAMINANT CONCENTRATION MAP IN 9-92

RANDOLPH A.F.B., BEXAR CO., TEXAS

PARSONS ENGINEERING SCIENCE, INC.

ATTACHMENT 6

Soil Contaminant Concentration

Map in 9-92

d original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER RANDOLPH AIR FORCE BASE (Name) ADDRESS _____ (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County BEXAR . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA ☐ Driven

6) WELL LOG: RAI-VW#2
Date Drilling: Started 3/20 19 93 Completed 3/21 19 93

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
11	Surface	15

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 6 - 9 SAND
If Gravel Packed give interval . . . from 15 ft. to 4 ft.
BENTONITE SEAL FROM 4 - 2

From (ft.)	To (ft.)	Description and color of formation material
0	5	DARK CLAY
5	11	WHITE MED. GRAVEL
11	15	TAN GREY MOTTLED CLAY

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC SCREEN	15	5	.040
4	N	PVC RISER	5	0	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 2 ft. to 0 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level DRY ft. below land surface Date 3/21
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

7) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

8) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

9) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? SOIL HC Depth of strata 0 - 11
Was a chemical analysis made? ☐ Yes ☒ No

I (or they) certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) WELL DRILLER'S LICENSE NO. 3209 - M

ADDRESS P.O. BOX 18580 (Street or RFD) CORPUS CHRISTI, TEXAS (City) 78480 (State) (Zip)

(Signed) Kim D. Wakefield (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

0199 (Rev. 05-18-90)

WELL OWNER'S COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Texas Water Commission are concerned that some persons having wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within 60 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material

d original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** RANDOLPH AIR FORCE BASE (Name) **ADDRESS** _____ (Street or RFD) (City) (State) (Zip)

2) **LOCATION OF WELL:**
County BEXAR , _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☐ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) **WELL LOG:** RAI- VW#3

Date Drilling:
Started 3/19 19 93
Completed 3/19 19 93

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
11	Surface	15

From (ft.)	To (ft.)	Description and color of formation material
0	1	GRAVEL SAND & BLACK SILTY CLAY
1	10	LT.TAN TO WHITE
10	15	TAN TO GREEN GREY CLA

(Use reverse side if necessary)

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 6 - 9 SAND
If Gravel Packed give interval . . . from 15 ft. to 4 ft.
BENTONITE SEAL FROM 4 - 2

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC SCREEN	15	5	.040
4	N	PVC RISER	5	0	

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 2 ft. to 0 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level DRY ft. below land surface Date 3/19
Artesian flow _____ gpm. Date _____

12) **PACKERS:** Type Depth

7) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

by certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand ilure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

PANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) WELL DRILLER'S LICENSE NO. 3209- M

ESS p.o. box 18580 (Street or RFD) CORPUS CHRISTI, TEXAS 78480 (City) (State) (Zip)

ed) Kevin D. Wahlfeld (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

e attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

0199 (Rev. 05-18-90)

WELL OWNER'S COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Texas Water Commission are concerned that some persons having wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within 60 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material
13	- 11	6 - 9 SAND
11	- 6.5	BENT. SEAL
6.5	- 5.5	6 - 9 SAND
5.5	- 3.5	BENT. SEAL
3.5	- 2.5	6 - 9 SAND
2.5	- 1	BENT. SEAL

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER RANDOLPH AIR FORCE BASE (Name) ADDRESS SAN ANTONIO (Street or RFD) TEXAS (City) (State) (Zip)

2) LOCATION OF WELL:
County BEXAR . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): VAPOR POINT
☐ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) WELL LOG: RAI MPC
Date Drilling: Started 3/20 1993 Completed 3/20 1993

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8	Surface	13

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other hsa
If Gravel Packed give interval . . . from _____ ft. to _____ ft.
* SEE BACK

From (ft.)	To (ft.)	Description and color of formation material
0	1	GRAVEL, SAND DRK. GREY CLAY
1	3	DK. BROWN SILTY CLAY W/ GRAVEL
3	5	LT. TAN CLAY W/SILTY GRAVEL
5	6	WHITE TO LT. TAN CLAY
6	8	CLAY LT. TAN SILTY
8	10	SAME W/GRAVEL
10	13	LT. TAN & GREY MOTTLED CLAY

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
1	N	PVC SCREEN	12.25	11.75	.0
1/2	N	PVC RISER	11.75	0	
1	N	PVC SCREEN	6.25	5.75	.0
1/2	N	PVC RISER	5.75	0	
1	N	PVC SCREEN	3.25	2.75	
1/2	N	PVC RISER	2.75	0	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 1 ft. to 0 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level DRY ft. below land surface Date 3
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata 0 - 12
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) WELL DRILLER'S LICENSE NO. 3209 - M

ADDRESS P.O. BOX 18580 (Street or RFD) CORPUS CHRISTI (City) TEXAS (State) 78480 (Zip)

Signed Kim D. Wakefield (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WC-0199 (Rev. 05-18-90)

WELL OWNER'S COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Texas Water Commission are concerned that some persons having wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log and within 60 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material
13	11	6 - 9 SAND
11	6.5	BENT. SEAL
6.5	5.5	6 - 9 SAND
5.5	3.5	BENT. SEAL
3.5	2.5	6 - 9 SAND
2.5	1	BENT. SEAL

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER RANDOLPH AIR FORCE BASE (Name) ADDRESS SAN ANTONIO, TX. (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County BEXAR . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:
Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____
Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): VAPOR POINT
☐ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) WELL LOG: RAI-MPB
Date Drilling: Started 3/20 19 93 Completed 3/20 19 93

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	13

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 6 - 9 SAND
If Gravel Packed give interval . . . from _____ ft. to _____ ft.
* SEE BACK OF PAGE

From (ft.)	To (ft.)	Description and color of formation material
0	1	BLACKISH CLAY W/GRAVEL AND SAND
1	6.5	LT. TAN W/WHITE CAL & GRAVEL
6.5	8	MOTTLED SILTY CLAY LT. TAN & GRAVEL W/ WHITE CLAY
8	9.5	GRAVEL W/SILT & TRACE TAN SAND
9.5	13	TAN & LT. GREY MOTTLED CLAY

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
1	N	PVC SCREEN	12.25	11.75	.040
½	N	PVC RISER	11.75	0	
1	N	PVC SCREEN	6.25	5.25	.040
½	N	PVC RISER	5.75	0	
1	N	PVC SCREEN	3.25	2.25	.040
½	N	PVC RISER	2.25	0	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 1 ft. to 0 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level DRY ft. below land surface Date 3/20
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of ~~water~~ SOIL H.C. Depth of strata 0 - 10
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING INC. (Type or print) WELL DRILLER'S LICENSE NO. 3209 - M

ADDRESS P.O. BOX 18580 (Street or RFD) CORP US CHRISTI, (City) TEXAS (State) 78480 (Zip)

(Signed) Kim M. Waldrop (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

WELL OWNER'S COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Texas Water Commission are concerned that some persons having wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within 60 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** RANDOLPH AIR FORCE BASE (Name) **ADDRESS** _____ (Street or RFD) (City) (State) (Zip)

2) **LOCATION OF WELL:**
County Bexar , _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) **WELL LOG:** RAI VW#1
Date Drilling: Started 3/19 19__ Completed 3/19 19__

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
11	Surface	15
2		17

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 6 - 9 SAND
If Gravel Packed give interval . . . from 17 ft. to 4 ft.
BENTONITE SEAL FROM 4 - 2

From (ft.)	To (ft.)	Description and color of formation material
0	8	SMALL TO MED. GRAVEL W/TAN CLAY
8	10	TAN SILTY CLAY W/GRAVEL AND SOME SAND
10	17	TAN AND GREY MOTTLED CLAY

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC SCREEN	15	5	.040
4	N	PVC RISER	5	0	

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 2 ft. to 0 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level DRY ft. below land surface Date 3/19
Artesian flow _____ gpm. Date _____

12) **PACKERS:** Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? SOIL H.C. Depth of strata 0 - 8
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) **WELL DRILLER'S LICENSE NO.** 3209 - M

ADDRESS P.O. BOX 18580, (Street or RFD) CORPUS CHRISTI, (City) TEXAS (State) 78480 (Zip)

(Signed) Kim D. Wakefield (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

WELL OWNER'S COPY

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER RANDOLPH AIR FORCE BASE (Name) ADDRESS _____ (Street or RFD) (City) (State) (Zip)

LOCATION OF WELL:
County BEXAR . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): VAPOR POINT
☐ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) WELL LOG: RAI - MDA
Date Drilling:
Started 3/19 1993
Completed 3/19 1993

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
8	Surface	13

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other HSA
If Gravel Packed give interval . . . from _____ ft. to _____ ft.
* SEE BACK OF PAGE

From (ft.)	To (ft.)	Description and color of formation material
0	1	GRAVEL, SAND BLACK CLAY
1	7	TAN TO WHITE GRAVEL
7	10	TAN TO WHITE GRAVEL W/ TAN CLAY
10	13	TAN AND GREY MOTTLED CLAY

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
1	N	PVC SCREEN	12.25	11.75	.040
½	N	PVC RISER	11.75	0	
1	N	PVC SCREEN	6.25	5.75	.040
½	N	PVC RISER	5.75	0	
1	N	PVC SCREEN	3.25	2.75	.040
½	N	PVC RISER	2.75	0	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 1 ft. to 0 ft. No. of Sacks Used 3
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level DRY ft. below land surface Date 3/19
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata 0-12
Was a chemical analysis made? ☐ Yes ☒ No

I certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) WELL DRILLER'S LICENSE NO. 3201 - M

ADDRESS P.O. BOX 18580 (Street or RFD) CORPUS CHRISTI, TEXAS (City) 78480 (State) (Zip)

(Signed) Kim D. Wakefield (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

199 (Rev. 05-18-90)

WELL OWNER'S COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

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> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within 60 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material
13	11	6 - 9 SAND
11	6.5	BENT. SEAL
6.5	5.5	6 - 9 SAND
5.5	3.5	BENT. SEAL
3.5	2.5	6 - 9 SAND
2.5	1	BENT. SEAL

S[illegible] original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER ~~RANDOLPH AIR FORCE BASE~~ (Name) ADDRESS _____ (Street or RFD) (City) (State) (Zip)

LOCATION OF WELL:
County Bexar . _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) WELL LOG: RAI-BG

Date Drilling: Started 3/20 19 93 Completed 3/20 19 93

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	10

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 6-9 SAND
If Gravel Packed give interval ... from 10 ft. to 2 ft.
BENTONITE SEAL 2 - 5'

From (ft.)	To (ft.)	Description and color of formation material
0	2	BLACK TOP SOIL
2	3	LT. TAN SILTY CLAY W/GRAVEL
3	6	GRAVEL W/LT. TAN SILT & CLAY
6	8	WHITE GRAVELY SILT W/TRACE CLAY
8	10	SILTY GRAVEL LT. TAN

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC SCREEN	8	3	.040
4	N	PVC RISER	3	0	

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from .5 ft. to 0 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used _____
Cemented by _____

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level DRY ft. below land surface Date 3/20
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

I certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) WELL DRILLER'S LICENSE NO. 3209 M

ADDRESS p.o. box 18580 (Street or RFD) CORPUS CHRISTI, TEXAS (City) (State) 78480 (Zip)

(Signed) Kim D. Wakefield (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

T[illegible]0199 (Rev. 05-18-90)

WELL OWNER'S COPY

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The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material

nd original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** RANDOLPH AIR FORCE BASE (Name) **ADDRESS** _____ (Street or RFD) (City) (State) (Zip)

2) **LOCATION OF WELL:**
County BEXAR _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☐ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other HSA

6) **WELL LOG:** RAI VW#1
Date Drilling: Started 3/19 19__ Completed 3/19 19__

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
11	Surface	15
2		17

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☒ Other 6 - 9 SAND
If Gravel Packed give interval . . . from 17 ft. to 4 ft.
BENTONITE SEAL FROM 4 - 2

From (ft.)	To (ft.)	Description and color of formation material
0	8	SMALL TO MED. GRAVEL W/TAN CLAY
8	10	TAN SILTY CLAY W/GRAVEL AND SOME SAND
10	17	TAN AND GREY MOTTLED CLAY

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	PVC SCREEN	15	5	.040
4	N	PVC RISER	5	0	

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 2 ft. to 0 ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used HAND
Cemented by JEDI

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☒ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? SOIL H.C. Depth of strata 0 - 8
Was a chemical analysis made? ☐ Yes ☒ No

11) **WATER LEVEL:**
Static level DRY ft. below land surface Date 3/19
Artesian flow _____ gpm. Date _____

12) **PACKERS:** Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME JONES ENVIRONMENTAL DRILLING (Type or print) **WELL DRILLER'S LICENSE NO.** 3209 - M

ADDRESS P.O. BOX 18580, (Street or RFD) CORPUS CHRISTI, (City) TEXAS (State) 78480 (Zip)

(Signed) Kim D. Wakefield (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

0199 (Rev. 05-18-90)

WELL OWNER'S COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Texas Water Commission are concerned that some persons having wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every licensed water well driller drilling, deepening or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within 60 days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. Each copy of a well log, other than a Commission copy, shall include the name, mailing address, and telephone number of the Board and the Commission. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential.

From (ft.)	To (ft.)	Description and color of formation material

ATTACHMENT 7

Groundwater Gradient Map

(Not Applicable)

ATTACHMENT 8

Groundwater Contaminant Concentration Map

(Not Applicable)

ATTACHMENT 9

Biodegradation Indicator Distribution Map

(Not Applicable)

ATTACHMENT 10

Soil Gas Survey Map

(Not Applicable)

ATTACHMENT 11

Respiration and Degradation

Rate Comparison

Attachment 11
Aboveground Jet Fuel Storage Tank #20 LPST 104626
Respiration and Degradation Rate Comparison
Randolph AFB, Texas

	Initial (Mar. 1993)		1-Year (May 1994)		2-Year (May 1995)	
Location-Depth	K_o (% O_2/min)	Degradation Rate (mg/kg/year)[a/]	K_o (% O_2/min)	Degradation Rate (mg/kg/year)[b/]	K_o (% O_2/min)	Degradation Rate (mg/kg/year)[b/]
VW1	0.0043	150	NS	NC	NS	NS
MPA-3	0.0058	610	NS	NC	0.0006	75.7
MPA-6	0.0076	290	0.0024	90	0.0006	27.8
MPA-12	NS	NC	NS	NC		
MPB-3	0.0055	580	NS	NC	0.0007	88.3
MPB-6	0.0084	320	0.0032	120	0.0004	18.5
MPB-12	0.0083	320	NS	NC	NS	NS
MPC-3	0.0042	440	0.0086	900	0.001	NS
MPC-6	0.0094	360	0.0045	170	0.001	46.3
VW2	0.0078	300	NS	NC	NS	NS

[a/] Milligrams of hydrocarbons per kilogram of soil per year.
[b/] Based on average moisture content of the soil at initial sampling. Final sampling was not performed as a liner was placed over the site.
[c/] NS = not sampled.
[d/] NC = not calculated.

ATTACHMENT 12

Surface Water Contaminant Concentration Map

(Not Applicable)

ATTACHMENT 13

Surface Water Flow Map

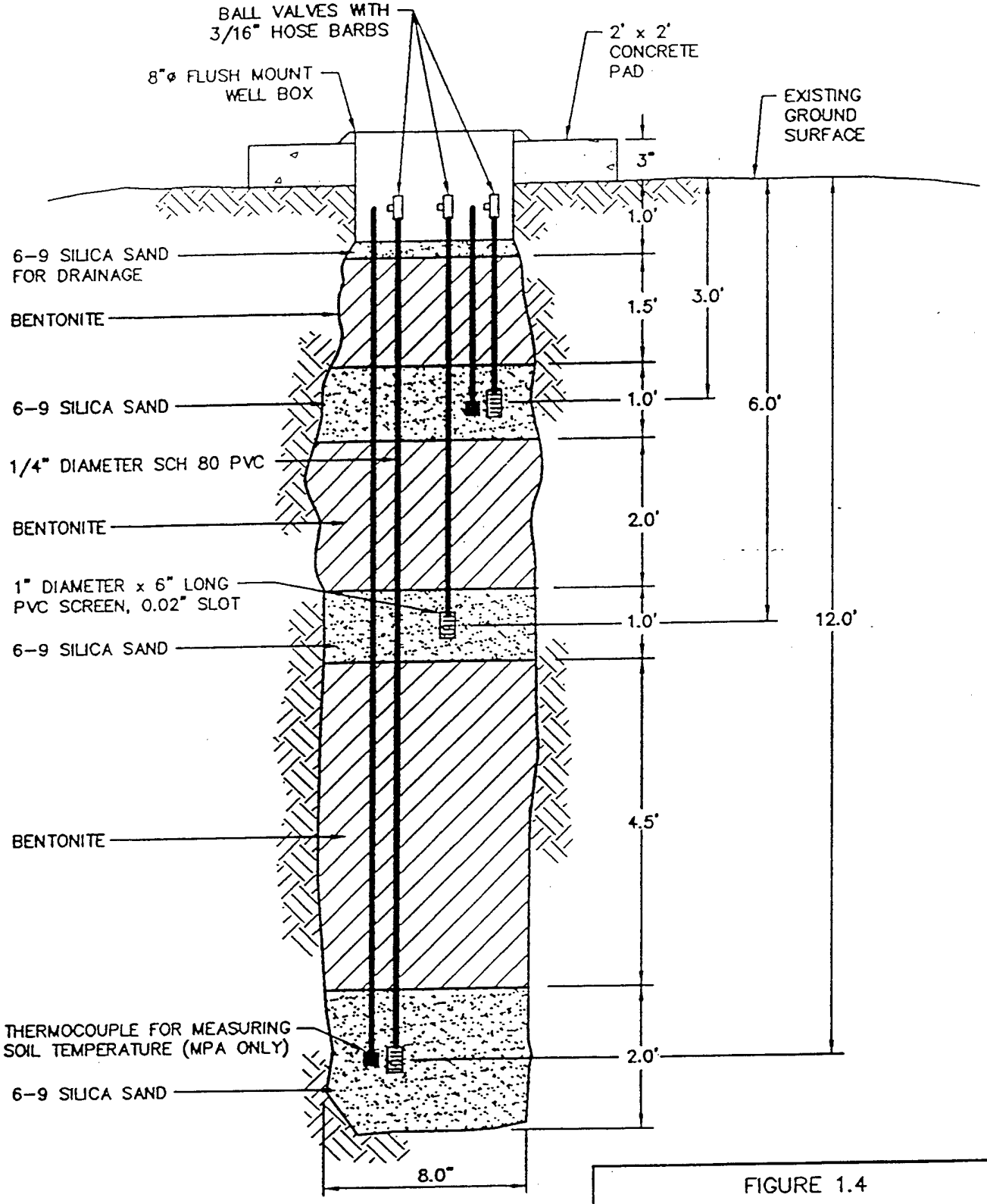
(Not Applicable)

ATTACHMENT 14

Soil Boring Logs and Monitor Well Completion Logs

ATTACHMENT 15

Summary Tables of Soil and Groundwater Analytical Results



NOT TO SCALE

FIGURE 1.4

STORAGE TANK #20
AS-BUILT MONITORING POINT
CONSTRUCTION DETAIL

RANDOLPH AFB, TEXAS

ENGINEERING-SCIENCE, INC.
Denver, Colorado

93DN0410, 05/20/93 at 13:59

Sheet of

GEOLOGIC BORING LOG

BORING NO. RMA-BG BACKGROUND
CLIENT:
JOB NO.: DEZ68.33.04
LOCATION: RANDOLPH AFB
GEOLOGIST: BRS
CONTRACTOR: JEDI DRILLING
RIG TYPE: Simco 2800
DRLG METHOD: hollow stem
BORING DIA.: 8" OD - 4.25" ID
DRLG FLUID NA
DATE SPUD: 3-20-93
DATE CMPL: 3-20-93
ELEVATION:
TEMP.: 70°
WEATHER: partly cloudy - windy
COMMENTS:

Elev. (ft.)	Depth (ft.)	Profile	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Remarks TIP = Bkgrnd/Reading (ppm)
	1			Black clay, moist, plast.-					no odor
				lt tan silty clay w/ gravel					
				gravel w/ lt tan silt and clay					no odor
	5								
				or gravelly silt w/ clay, white to light tan		X	D	41, 49 50/3	Time: 11:05 no odor, TVH=47 ppm
				silty gravel up to 1/2"					no odor
	10			gravel up to 1/2" ~~sand or clay~~ BRS					
				TD= 10' 0"					
	15								
	20								
	25								
	30								

sl – slight
tr – trace
sm – some
& – and
@ – at
w – with

v – very
lt – light
dk – dark
bf – buff
brn – brown
blk – black

f – fine
m – medium
c – coarse
BH – Bore Hole
SAA – Same As Above

SAMPLE TYPE
D – DRIVE
C – CORE
G – GRAB

C Core recovery

Core lost

Water level drilled

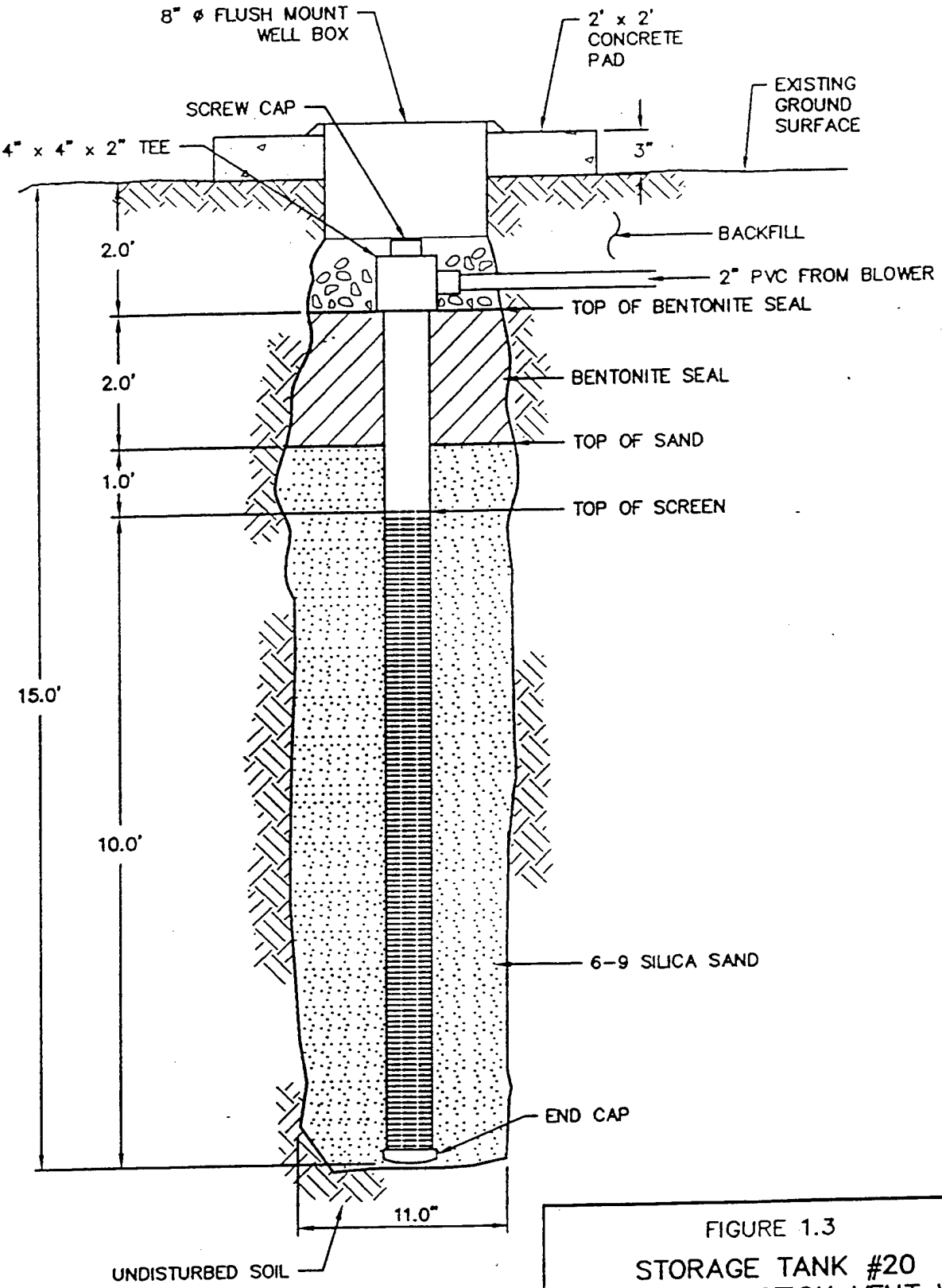


FIGURE 1.3

STORAGE TANK #20
AS-BUILT INJECTION VENT WELL
CONSTRUCTION DETAIL

RANDOLPH AFB, TEXAS

ENGINEERING-SCIENCE, INC.
Denver, Colorado

Sheet of

GEOLOGIC BORING LOG

BORING NO. MPB - | CONTRACTOR: JEDI DRILLING | DATE SPUD: 3/20/93
CLIENT: | RIG TYPE: SIMCO 2800 | DATE CMPL: 3/20/93
JOB NO.: DE268.33 04 | DRLG METHOD: HOLLOW STEM | ELEVATION:
LOCATION: RANDOLPH AFB | BORING DIA.: 6.36" 8.00" RAK | TEMP.: ≈ 65°
GEOLOGIST: BRB | DRLG FLUID N/A | WEATHER: Ptly Cldy wind Smpl
COMMENTS:

Elev. (ft.)	Depth (ft.)	Pro-file	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Remarks TIP = Bkgrnd/Reading (ppm)
	1			3" gravel drain 2" sand some silt @ 5"					
				clay soft, black, moist @ 6", starting			D	10,50 54	Time 0724 strong odor TVH = 56 PPMV
				at 1' Lt tan to white caliche @ 2' gravel					
				w/ silt to sand					
	5			SAA - gravel w/ silt, to sand					
				@ 6.5 mottled s.lty clay - lt tan to			D	49,48, 46	Time 0740 strong odor TVH = 880 PPMV
				gray and white to 8'					
				gravel w silt sm sand					
	10			@ 9.5 lt tan clay, silty					slight odor
				SAA, moist					
				TD = 132"					
	15								
	20								
	25								
	30								

sl – slight | v – very | f – fine
tr – trace | lt – light | m – medium
sm – some | dk – dark | c – coarse
& – and | bf – buff | BH – Bore Hole
@ – at | brn – brown | SAA – Same As Above
w – with | blk – black

SAMPLE TYPE
D – DRIVE C Core recovery
C – CORE
G – GRAB Core lost

Water level drilled

GEOLOGIC BORING LOG

BORING NO. MPC
CLIENT:
JOB NO.: DEZ68.33.04
LOCATION: RANDOLPH AFB
GEOLOGIST: RAFI/BRB

CONTRACTOR: JEDI DRILLING
RIG TYPE: Sinco 2800
DRLG METHOD: hollow stem
BORING DIA.: 6¼, 8" RAF
DRLG FLUID: NA

DATE SPUD: 3/20/93
DATE CMPL: 3/20/93
ELEVATION:
TEMP.: ≈ 65°
WEATHER: partly cloudy, w.

COMMENTS:

Elev. (ft.)	Depth (ft.)	Pro-file	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Remarks TIP = Bkgrnd/Reading (ppm)
	1			1" gravel drain, 5" dark brown/black moist clay 5" caliche - wht w/clay s			D	pressed	0920 strong odo- took picture, TVH=1200
				dark brown s.lty clay w/ gravel					strong odo-
				lt tan clay, s:lty w/ gravel					
	5			gravel w/ clay and silt, lt tan					
				white to lt tan s:lty clay w/ gravel		X	D	23,47 50	09:17 odo- TVH= 740 ppmv BRN
				clay, lt tan, silty, no gravel @ 6.5'					
				lt tan, s:lty clay w/ gravel					
	10			lt tan, s:lty clay . no gravel					
				mottled clay · lt tan to grey green,		X	D	16, 15, 19,24	09:33 no odor
				w/caliche band (thin)					2 photos TVH= 220 ppmv
				SAA					
				TD = 13'6"					
	15								
	20								
	25								
	30								

sl – slight
tr – trace
sm – some
& – and
@ – at
w – with

v – very
lt – light
dk – dark
bf – buff
brn – brown
blk – black

f – fine
m – medium
c – coarse
BH – Bore Hole
SAA – Same As Above

SAMPLE TYPE
D – DRIVE
C – CORE
G – GRAB

C Core recovery
Core lost

Water level drilled

Sheet of

GEOLOGIC BORING LOG

BORING NO. VW-3 CONTRACTOR: JEDI DRILLING DATE SPUD: 3/19/93
CLIENT: RIG TYPE: SIMCO 2800 DATE CMPL: 3/19/93
JOB NO.: DE2688.33.04 DRLG METHOD: HOLLOW STEM ELEVATION:
LOCATION: RANDOLPH AFB BORING DIA.: 8" 6.85" OVERBORE to 11" TEMP.: ≈65°
GEOLOGIST: RAF DRLG FLUID NA WEATHER: CLOUDY, WNDY SION
COMMENTS:

Elev. (ft.)	Depth (ft.)	Profile	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Remarks TIP = Bkgrnd/Reading (ppm)
	1			3" GRAVEL drain 3" SAND sm				6,5	NO ODOR
				SILT & 8" CLAY w/ sm SILT, blck		D		12,22	0952 21 ppm
				moist.					
				lt tan to white GRAVEL w/ SILT					
	5			and SAND					NO ODOR
				GRAVEL - lt. tan to white, tr					
				silt and sand,					
				SAA					
	10								
				mottled CLAY w/ tr SILT tan					NO ODOR
				to grey green, slightly moist, Fe					
				stains					
				tan CLAY, moist FE stains					
	15			SAA					OVERBORE TO 15'
				TD 15' 5"					
	20								
	25								
	30								

sl – slight
tr – trace
sm – some
& – and
@ – at
w – with

v – very
lt – light
dk – dark
bf – buff
brn – brown
blk – black

f – fine
m – medium
c – coarse
BH – Bore Hole
SAA – Same As Above

SAMPLE TYPE
D – DRIVE
C – CORE
G – GRAB

C Core recovery

Core lost

Water level drilled

GEOLOGIC BORING LOG

BORING NO. MPA
CLIENT:
JOB NO.: DEZ68.33.04
LOCATION: RANDOLPH AFB
GEOLOGIST: RAF
COMMENTS:

CONTRACTOR: JEDI DRILLING
RIG TYPE: SIMCO 2800
DRLG METHOD: HOLLOW STEM
BORING DIA.: ~~6.25"~~ 8" OD 4.25 ID
DRLG FLUID: NA

DATE SPUD: 3/19/[redacted]3
DATE CMPL: 3/19/93
ELEVATION:
TEMP.: ± 70°
WEATHER: CLOUDY W[redacted]

Elev. (ft.)	Depth (ft.)	Pro-file	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Remarks TIP = Bkgrnd/Readin
	1			3" GRAVEL drain 2" SAND drain & 5" CLAY, blk moist. Sharp fg 1' lt. tan to white caliche (GRAVEL w/ SILT to SAND)				16,25, 25	TIME 160[redacted] 925 ppm
						D			
	5			SAA				50, 70, 50	TIME 163[redacted] 700 ppm
						D			
				SAA Silty clay sm sand light tan gravel up to 3/4"					
	10			~~mottled~~ clay w trace silt - - - tan to gray green, sl. moist tan clay				5,10, 19	TIME 174[redacted] 260 ppm
						D			
				TD=13.5'					
	15								
	20								
	25								
	30								

sl – slight
tr – trace
sm – some
& – and
@ – at
w – with

v – very
lt – light
dk – dark
bf – buff
brn – brown
blk – black

f – fine
m – medium
c – coarse
BH – Bore Hole
SAA – Same As Above

SAMPLE TYPE
D – DRIVE
C – CORE
G – GRAB

C Core recovery
Core lost

Water level drilled

Sheet of

GEOLOGIC BORING LOG

BORING NO. VW-1 CONTRACTOR: JEDI DRILLING DATE SPUD: 3/19/93
CLIENT: RIG TYPE: SIMCO 2800 DATE CMPL: 3/20/93
JOB NO.: DE268.33.04 DRLG METHOD: HOLLOW STEM ELEVATION:
LOCATION: RANDOLPH AFB BORING DIA.: 8.0 6.25" w/ 11" OVERBORE TEMP.: ≈65°
GEOLOGIST: RAF DRLG FLUID NA WEATHER: CLOUDY, WIND S 10 MPH
COMMENTS:

Elev. (ft.)	Depth (ft.)	Pro-file	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Remarks TIP = Bkgrnd/Reading (ppm)
	1			3" GRAVEL DRAIN 3" SAND SM					
				SILT @ 6" CLAY, blk, moist	VW 1-2.5	D		16,43	STRONG ODOR @ 1'
				STARTING @ 1ft LT TAN TO WHITE	3'			49,50	0758 TIME 310 ppm
				GRAVEL W/ SILT, TR SAND					STRONG ODOR
	5			GRAVEL (.5" ROUNDED) W/ SILT					
				SAA, W/ CALICHE		D		50, 50(3")	REFUSAL @ 8" STR ODOR TIME 0825 1200 ppm
				SAA					
				SILTY CLAY W/ SM SAND, LT TAN					ODOR DECREASING
	10			GRAVEL W/ SILT					
				mottled CLAY tan to gray green		D		6,12, 15,16	NO ODOR 200 ppm
				slightly moist, some Fe stains					
				CLAY W/ tr SAND, moist Tan					NO ODOR
				SAA					
	15			SAA					OVERBORE TO 15'
				St SS lt brown to tan, Gray streaks		D		10,20 22,40	NO ODOR 25 ppm
				throughout, mottled clay					
				TD = 15' 5"					
	20								
	25								
	30								

sl – slight
tr – trace
sm – some
& – and
@ – at
w – with

v – very
lt – light
dk – dark
bf – buff
brn – brown
blk – black

f – fine
m – medium
c – coarse
BH – Bore Hole
SAA – Same As Above

SAMPLE TYPE
D – DRIVE C Core recovery
C – CORE
G – GRAB Core lost

Water level drilled

GEOLOGIC BORING LOG

BORING NO. VW-2 | CONTRACTOR: JEDI DRILLING | DATE SPUD: 3/20/9[redacted]
CLIENT: | RIG TYPE: SIMCO 2800 | DATE CMPL: 3/21/93
JOB NO.: DE268.33.04 | DRLG METHOD: Hollow Stem | ELEVATION:
LOCATION: RANDOLPH AFB | BORING DIA.: 8.00" | TEMP.: 75°
GEOLOGIST: RAF | DRLG FLUID NONE | WEATHER: Ptly cldy W[redacted]
COMMENTS:

Elev. (ft.)	Depth (ft.)	Profile	US CS	Geologic Description	Samples No.	Samples Depth (ft)	Sample Type	Penet. Res.	Rem[redacted] TIP = Bkgrnd/Rea[redacted]
	1			1" GRAVEL drlg 1" SILT & SAND					
				starting @ 2" CLAY black, moist					NO ODOR
				SAA					
				~~CALICHE (GRAVEL w/~~ CLAY dense					
	5			dk gray, moist, tr SAND			D		slt odor
				CALICHE (GRAVEL w/ SILT and			~~PUSH~~ SPLIT SPOON	50,	spoon refusal
				tr CLAY) lt tan to White					slt odor
				GRAVEL (.1" to .25") tr SILT					
				& lt tan to white.					NO ODOR
	10			SAA - no silt					
				GRAVEL w/ tr c SAND					
				CLAY w/ c SAND and tr SILT					
				tan, sl moist, mottled CLAY					
	15			SAA					
				TD 15' 9"					
	20								
	25								
	30								

sl – slight
tr – trace
sm – some
& – and
@ – at
w – with

v – very
lt – light
dk – dark
bf – buff
brn – brown
blk – black

f – fine
m – medium
c – coarse
BH – Bore Hole
SAA – Same As Above

SAMPLE TYPE
D – DRIVE
C – CORE
G – GRAB

C Core recov[redacted]
Core lost

Water level drilled

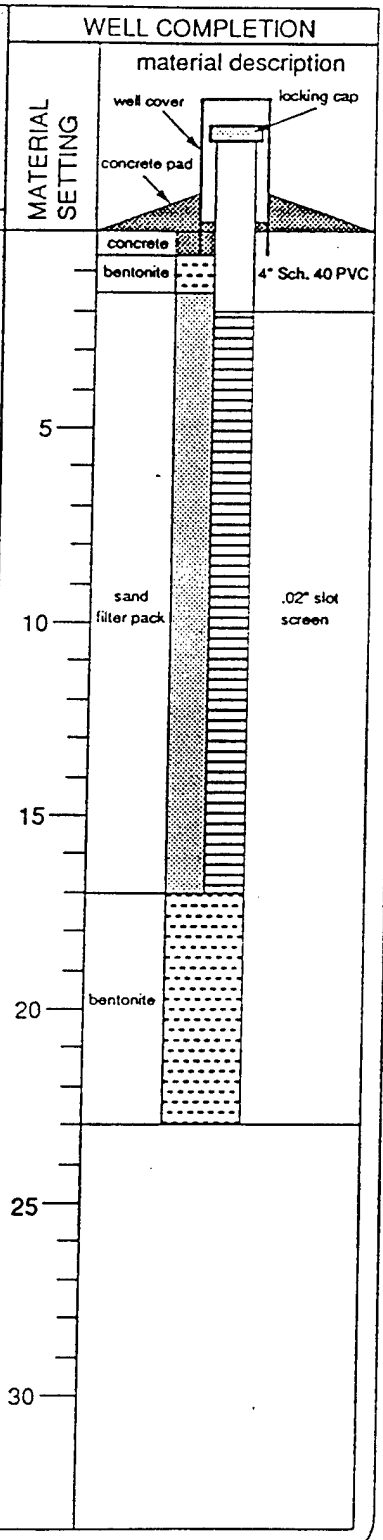
DRILLER: RICK JONES, JONES ENVIRONMENTAL DRILLING, INC., SAN ANTONIO, TX.
DRILLING METHOD: 7.5" HOLLOW STEM AUGER
SAMPLE METHOD: 2.0" X 24" SPLIT SPOON
ELEVATION: WELL COVER= 102.245'; GRADE= 99.675'; TOP OF CASING= 101.740'

LOG BY: STEVE VELTRI, E.I.T.

initial readings from grade:
INITIAL WATER= N/A
STATIC WATER= N/A
CASING BOTTOM= 17.0'

DEPTH (ft)	PID (ppm)	SAMPLE NO.	STRATIGRAPHY	SOIL DESCRIPTION (classification, color, texture, odor, etc.)
0				GRAVEL
				CH--CLAY, brown with gravel, highly plastic, no odor
5	298	B10-5.0		ML--SILT, light brown with gravel, slightly plastic, slight odor blow count (6"-12"-18"-24"): 3-9-33-48
	254			ML--CLAYEY SILT, tan with calcareous deposits, slightly plastic, slight odor, blow count (6"-12"-18"-24"): 21-45-20-15
10	294			ML--CLAYEY SILT, tan & gray with calcareous deposits, slightly plastic, slight odor, blow count (6"-12"-18"-24"): 7-11-15-17
	269			CL--SILTY CLAY, tan & gray with calcareous deposits, moderately plastic, slight odor, blow count (6"-12"-18"-24"): 4-11-13-16
	228			CL--SILTY CLAY, tan & gray with calcareous deposits, moderately plastic, slight odor, blow count (6"-12"-18"-24"): 8-13-16-18
15	153			CL--SILTY CLAY, tan with trace calcareous deposits, moderately plastic, slight odor, blow count (6"-12"-18"-24"): 10-12-19-20
	16			CL--SILTY CLAY, tan, moderately plastic, no odor, blow count (6"-12"-18"-24"): 8-15-22-29
20	20			CL--SILTY CLAY, tan & gray, moderately plastic, no odor, blow count (6"-12"-18"-24"): 16-23-30-50/5"
	50			CL--SILTY CLAY, tan with trace sand, moderately plastic, no odor blow count (6"-12"-18"-24"): 17-45-50/3.5"
	14	B10-23.0		ML--CLAYEY SILT, tan with trace sand, slightly plastic, no odor, blow count (6"-12"-18"-24"): 16-48-50/2"
25				TOTAL BORE DEPTH = 23 FEET
30				

WELL COMPLETION



RANDOLPH AIR FORCE BASE
BEXAR COUNTY, TEXAS

LOG - B10
MONITOR WELL - MW10
9/16/92

extra ENGINEER, inc.
Environmental Services

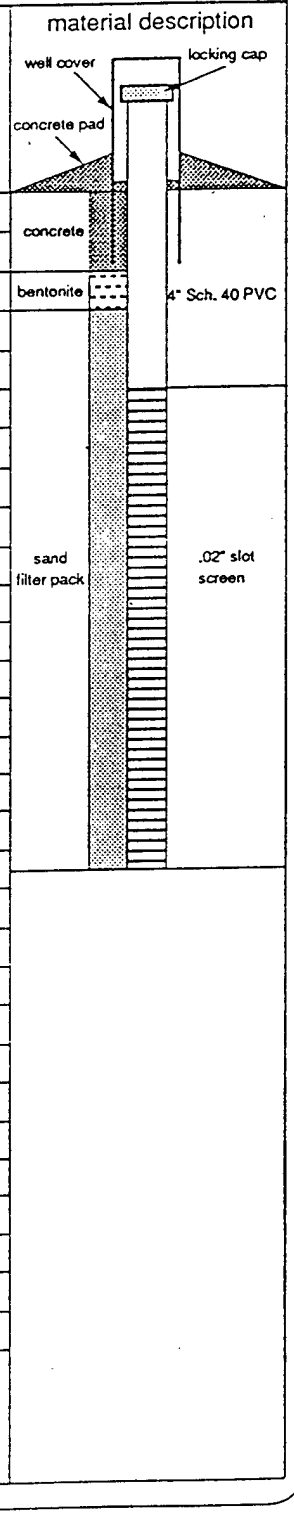
DRILLER: RICK JONES, JONES ENVIRONMENTAL DRILLING, INC., SAN ANTONIO, TX.
DRILLING METHOD: 7.5" HOLLOW STEM AUGER
SAMPLE METHOD: 2.0" X 24" SPLIT SPOON
ELEVATION: WELL COVER= 103.210'; GRADE= 100.355'; TOP OF CASING= 102.470'

initial readings from grade:
INITIAL WATER= N/A
STATIC WATER= N/A
CASING BOTTOM= 17.5'

LOG BY: STEVE VELTRI, E.I.T.

DEPTH (ft)	PID (ppm)	SAMPLE NO.	STRATIGRAPHY	SOIL DESCRIPTION (classification, color, texture, odor, etc.)
0				GRAVEL
				CH--CLAY, brown with gravel, highly plastic, no odor
5	0			ML--SILT, tan with gravel, slightly plastic, no odor, blow count (6"-12"-18"-24"): 24-50/1"
	1			ML--SILT, tan with gravel, slightly plastic, no odor, blow count (6"-12"-18"-24"): 40-50/4"
10	3			CL--SILTY CLAY, tan with calcareous deposits, moderately plastic, no odor, blow count (6"-12"-18"-24"): 5-6-8-9
	244	B12-12.5		CL--SILTY CLAY, dark tan, moderately plastic, slight odor, blow count (6"-12"-18"-24"): 4-8-13-18
15	0			CL--SILTY CLAY, tan & gray, moderately plastic, no odor, blow count (6"-12"-18"-24"): 10-19-23-32
	4	B12-17.5		CL--SILTY CLAY, tan & gray, moderately plastic, no odor, blow count (6"-12"-18"-24"): 9-19-34-34
20				TOTAL BORE DEPTH = 17.5 FEET
25				
30				

WELL COMPLETION



RANDOLPH AIR FORCE BASE
BEXAR COUNTY, TEXAS

LOG - B12
MONITOR WELL - MW12
9/17/92

extra ENGINEER, inc.
Environmental Services

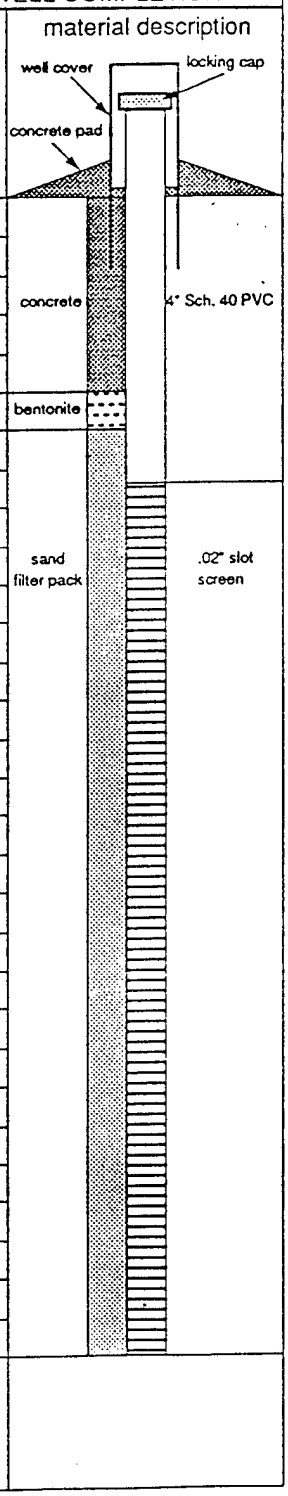
DRILLER: RICK JONES, JONES ENVIRONMENTAL DRILLING, INC., SAN ANTONIO, TX.
DRILLING METHOD: 7.5" HOLLOW STEM AUGER
SAMPLE METHOD: 2.0" X 24" SPLIT SPOON
ELEVATION: WELL COVER= 102.485'; GRADE= 99.635'; TOP OF CASING= 101.815'

LOG BY: STEVE VELTRI, E.I.T.

initial readings from grade:
INITIAL WATER= N/A
STATIC WATER= N/A
CASING BOTTOM= 30.0'

DEPTH (ft)	PID (ppm)	SAMPLE NO.	STRATIGRAPHY	SOIL DESCRIPTION (classification, color, texture, odor, etc.)
0				GRAVEL
				CH--CLAY, brown with gravel, highly plastic, no odor
5	265	B14-5.0		ML--CLAYEY SILT, light tan, slightly plastic, slight odor, blow count (6"-12"-18"-24"): 5-7-11-10
	152			ML--CLAYEY SILT, tan, slightly plastic, slight odor, blow count (6"-12"-18"-24"): 2-4-11-12
10	88			ML--CLAYEY SILT, tan, slightly plastic, slight odor, blow count (6"-12"-18"-24"): 9-12-27-37
	110			ML--CLAYEY SILT, tan, slightly plastic, slight odor, blow count (6"-12"-18"-24"): 7-30-32-50
15	74			SM--SANDY SILT, light tan, non-plastic, slight odor, blow count (6"-12"-18"-24"): 22-22-50/4"
	28			CL--SILTY CLAY, tan & gray w/trace calcareous deposits, slightly plastic, no odor, blow count (6"-12"-18"-24"): 19-21-32-50
20	12			CL--SILTY CLAY, tan & gray, slightly plastic, no odor, blow count (6"-12"-18"-24"): 20-50/6"
	27			CL--SILTY CLAY, tan & gray with trace of sand, slightly plastic, no odor, blow count (6"-12"-18"-24"): 29-50/5"
25	53	B14-25.0		GM--GRAVEL, with sand & silt, non-plastic, no odor, blow count (6"-12"-18"-24"): 50/6"
30				TOTAL BORE DEPTH = 30.0 FEET

WELL COMPLETION



RANDOLPH AIR FORCE BASE
BEXAR COUNTY, TEXAS

LOG - B14
MONITOR WELL - MW14
9/17/92

extra ENGINEER, inc.
Environmental Services

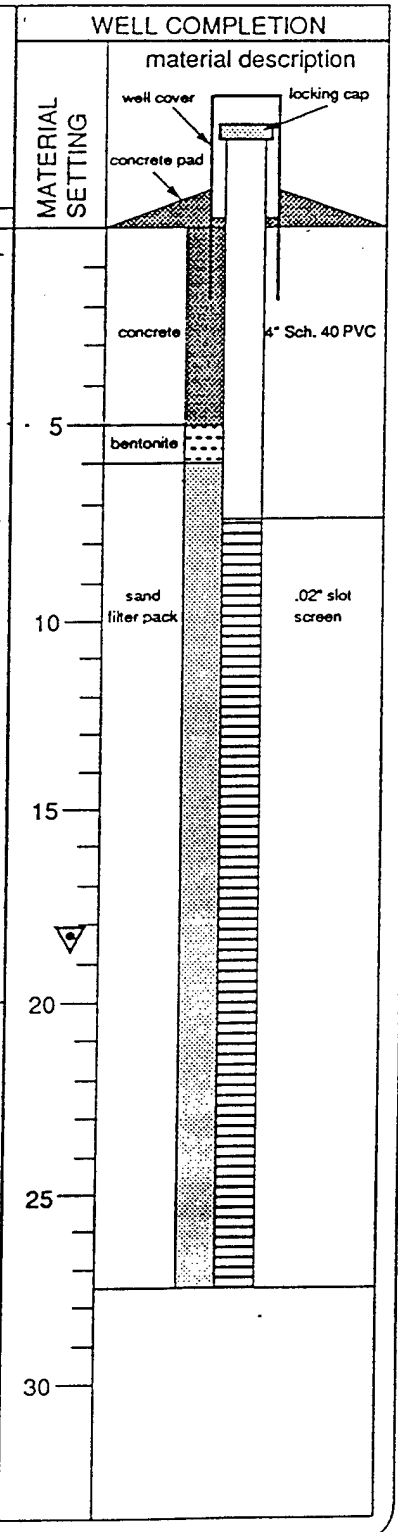
DRILLER: RICK JONES, JONES ENVIRONMENTAL DRILLING, INC., SAN ANTONIO, TX.
DRILLING METHOD: 7.5" HOLLOW STEM AUGER
SAMPLE METHOD: 2.0" X 24" SPLIT SPOON
ELEVATION: WELL COVER= 101.895'; GRADE= 99.380'; TOP OF CASING= 101.355'

LOG BY: STEVE VELTRI, E.I.T.

initial readings from grade:
INITIAL WATER= 19.00'
STATIC WATER= 18.88'
CASING BOTTOM= 27.5'

DEPTH (ft)	PID (ppm)	SAMPLE NO.	STRATIGRAPHY	SOIL DESCRIPTION (classification, color, texture, odor, etc.)
0				GRAVEL
				CH--CLAY, brown with gravel, highly plastic, no odor
5	9			ML--SILT, tan with calcareous deposits, slightly plastic, no odor, blow count (6"-12"-18"-24"): 3-6-8-9
	21			ML--SILT, tan, slightly plastic, no odor, blow count (6"-12"-18"-24"): 4-9-8-11
10	25			ML--SILT, tan, slightly plastic, no odor, blow count (6"-12"-18"-24"): 4-4-3-8
	25			SM--SANDY SILT, light tan, non-plastic, no odor, blow count (6"-12"-18"-24"): 6-26-18-11
15	33			SM--SANDY SILT, light tan with trace of gravel, non-plastic, no odor, blow count (6"-12"-18"-24"):11-14-50/3"
	66	B13-17.5		SM--SANDY SILT, light tan with gravel, non-plastic, no odor, wet, blow count (6"-12"-18"-24"): 11-15-50/6"
20				GM--GRAVEL, with sand & silt blow count (6"-12"-18"-24"): 50/1"
	195			ML--CLAYEY SILT, grayish tan, moderately plastic, slight odor, blow count (6"-12"-18"-24"):15-28-30-47
25	216	B13-25.0		ML--CLAYEY SILT, grayish tan, moderately plastic, slight odor, blow count (6"-12"-18"-24"): 20-50/6"
				WATER-- no recovery
				TOTAL BORE DEPTH = 27.5 FEET
30				

WELL COMPLETION



RANDOLPH AIR FORCE BASE
BEXAR COUNTY, TEXAS

LOG - B13
MONITOR WELL - MW13
9/17/92

extra ENGINEER, inc.
Environmental Services

ATTACHMENT 15

Summary Tables of Soil and Groundwater Analytical Results

Attachment 15 Soil Data

Sample Location	Laboratory Data							
	Date	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Total Xylene (ppm)	Total BTEX	TPH (ppm)	Total Lead
B1-9	8/27/92	<0.4	0.4	0.8	6.5	7.7	190.0	6.5
B1-13	8/27/92	NA	NA	NA	NA	NA	45.0	NA
B2-3	8/27/92	NA	NA	NA	NA	NA	<10.0	NA
B2-12.5	8/27/92	NA	NA	NA	NA	NA	<10.0	NA
B3-12	8/27/92	NA	NA	NA	NA	NA	<10.0	NA
B3-12.5	8/27/92	NA	NA	NA	NA	NA	25.0	NA
B4-9	8/27/92	NA	NA	NA	NA	NA	72.0	NA
B4-14.5	8/27/92	NA	NA	NA	NA	NA	24.0	NA
B5-3	8/28/92	NA	NA	NA	NA	NA	24.0	NA
B6-3	8/28/92	<0.4	<0.4	<0.4	<0.4	<1.6	800.0	21.0
B7.3	8/28/92	NA	NA	NA	NA	NA	360.0	NA
B8.2	8/28/92	NA	NA	NA	NA	NA	1100.0	NA
B9-1.5	8/28/92	NA	NA	NA	NA	NA	190.0	NA
B10-5	9/16/92	<0.4	<0.4	<0.4	<0.4	<1.6	280.0	NA
B10-23	9/16/92	<0.4	<0.4	<0.4	<0.4	<1.6	22.0	NA
B11-12.5	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	170.0	NA
B11-17.5	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	39.0	NA
B12-12.5	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	35.0	NA
B12-17.5	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	30.0	NA
B13-17.5	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	59.0	NA
B13-25.0	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	36.0	NA
B14-5.0	9/17/92	<0.4	<0.4	<0.4	0.4	0.4	27.0	NA
B14-25.0	9/17/92	<0.4	<0.4	<0.4	<0.4	<1.6	47.0	NA
DC-1	9/22/92	<0.4	<0.4	<0.4	<0.4	<1.6	170.0	NA
VW1-5	3/19/93	U	1.5	U	1.36	NA	32.0	NA
MPA-1		U	1.5	13.0	130.0	NA	851.8	NA
MPA-9.5		U	0.003	U	U	NA	3.2	NA
MPB-5		U	1.2	U	2.0	NA	17.0	NA

Qualifiers and Definitions:

U= Compound analyzed for, but not detected.

NS= No sample

NA= Not Analyzed

Attachment 15 Groundwater Data

Sample Location	Laboratory Data								
	Date	Depth to Water	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Total Xylene (ppm)	Total BTEX	TPH (ppm)	TDS (mg/L)
MW10	9/22/92	DRY	NS	NS	NS	NS	NS	NS	NS
MW11	9/22/92	DRY	NS	NS	NS	NS	NS	NS	NS
MW12	9/22/92	DRY	NS	NS	NS	NS	NS	NS	NS
MW13	9/22/92	21.38	0.200	<.001	0.006	<.001	0.206	4.9	572.000
MW14	9/22/92	DRY	NS	NS	NS	NS	NS	NS	NS

Qualifiers and Definitions:

U= Compound analyzed for, but not detected.

NS= No sample

NA= Not Analyzed

ATTACHMENT 16

Summary Tables of All Gauging Data

(Not Applicable)

ATTACHMENT 17

Soil, Groundwater, and Soil Gas

Analytical Reports

CHEMRON
INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (512) 340-8121

Client: Extra Engineer, Inc.
638-D W. Rhapsody
San Antonio, TX 78216

Date Received: 09/18/92
Time Received: 09:00
Date Sampled: 09/16/92

Client's Job #:
Chain of Custody #:
Report Date: 09/21/92

CHEMICAL ANALYSIS REPORT

Chemron #	Sample Description	Sample Matrix	BTEX Analysis Date	Benzene (PPM)	Toluene (PPM)	Ethylbenzene (PPM)	Xylenes (PPM)	Total BTEX (PPM)	TPH Analysis Date	TPH (PPM)
20228	Randolph AFB - AST #20 Union B10-5 Soil Boring Sampled @ 5'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	280.
20229	Randolph AFB - AST #20 Union B10-23 Soil Boring Sampled @ 23'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	22.

Approved By: _____

Analytical Methods: BTEX in Soil or Water - 8020/AHS; TPH in Water - 418.1; TPH in Soil - 3540/418.1 or 3550/418.1

CHEMRON
INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (512) 340-8121

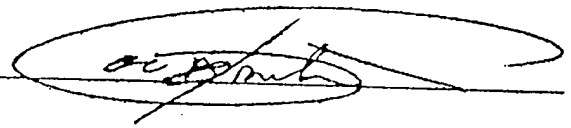
Client: Extra Engineer, Inc.
638-D W. Rhapsody
San Antonio, TX 78216

Date Received: 09/18/92
Time Received: 09:00
Date Sampled: 09/17/92

Client's Job #:
Chain of Custody #:
Report Date: 09/21/92

CHEMICAL ANALYSIS REPORT

Chemron #	Sample Description	Sample Matrix	BTEX Analysis Date	Benzene (PPM)	Toluene (PPM)	Ethylbenzene (PPM)	Xylenes (PPM)	Total BTEX (PPM)	TPH Analysis Date	TPH (PPM)
20230	Randolph AFB - AST #20 Union B11-12.5 Soil Boring Sampled @ 12.5'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	170.
20231	Randolph AFB - AST #20 Union B11-17.5 Soil Boring Sampled @ 17.5'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	39.
20232	Randolph AFB - AST #20 Union B12-12.5 Soil Boring Sampled @ 12.5'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	35.
20233	Randolph AFB - AST #20 Union B12-17.5 Soil Boring Sampled @ 17.5'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	30.
20234	Randolph AFB - AST #20 Union B13-17.5 Soil Boring Sampled @ 17.5'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	59.
20235	Randolph AFB - AST #20 Union B13-25.0 Soil Boring Sampled @ 25.0'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	36.
20236	Randolph AFB - AST #20 Union B14-5.0 Soil Boring Sampled @ 5.0'	Soil	09/18/92	< .4	< .4	< .4	.4	0.4	09/18/92	27.
20237	Randolph AFB - AST #20 Union B14-25.0 Soil Boring Sampled @ 25.0'	Soil	09/18/92	< .4	< .4	< .4	< .4	< 1.6	09/18/92	47.

Approved By: 

Analytical Methods: BTEX in Soil or Water - 8020/AHS; TPH in Water - 418.1; TPH in Soil - 3540/418.1 or 3550/418.1

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (512) 340-8121

Client: Extra Engineer, Inc.
638-D W. Rhapsody
San Antonio, TX 78216

Date Received: 09/22/92
Time Received: 11:08
Date Sampled: 09/22/92

Client's Job #:
Chain of Custody #:
Report Date: 09/24/92

CHEMICAL ANALYSIS REPORT

Chevron #	Sample Description	Sample Matrix	BTEX Analysis Date	Benzene (PPM)	Toluene (PPM)	Ethylbenzene (PPM)	Xylenes (PPM)	Total BTEX (PPM)	TPH Analysis Date	TPH (PPM)
20411	Randolph AFB AST #20 & #21 DC-1 Drill Cuttings	Soil	09/23/92	< .4	< .4	< .4	< .4	< 1.6	09/24/92	170.

Approved By: R. Adams

Analytical Methods: BTEX in Soil or Water - 8020/AHS; TPH in Water - 418.1; TPH in Soil - 3540/418.1 or 3550/418.1

CHAIN OF CUSTODY

SAMPLE SITE: Randolph AFB
AST #20

SAMPLER: Steven Vollrath, E.I.T.
Extra Engineer, Inc.

sample ID	date	time	sample description
B10-5	9/16/92	1205	Soil Boring Sampled @ 5'
B10-23	9/16/92	1737	Soil Boring Sampled @ 23'

ANALYTICAL INSTRUCTIONS:

4°

TPH (418.1) BTEX

relinquished by:
name: Steve
date: 9/18/92 time: 0900
company: Extra Engineer, Inc.

received by:
name:
date: 9/15/92 time: 0900
company: CHEMRON
sample condition: 4°C

name:
date: time:
company:

name:
date: time:
company:
sample condition:

CHAIN OF CUSTODY

SAMPLE SITE: RANDOLPH AFB
AST #20

SAMPLER: STEVE VELTRI, E.I.T.
Extra Engineer, Inc.

sample ID	date	time	sample description
B11-12.5	9/17/92	5:56	SOIL BORING SAMPLED @ 12.5'
B11-17.5	"	9:18	" " " @ 17.5'
B12-12.5	"	1137	" " " @ 12.5'
B12-17.5	"	1212	" " " @ 17.5'
B13-17.5	"	1520	" " " @ 17.5'
B13-25.0	"	1604	" " " @ 25'
B14-5.0	"	1818	" " " @ 5.0'
B14-25.0	"	2023	" " " @ 25.0'

ANALYTICAL INSTRUCTIONS:

48°

TPH (418.1), BTEX

relinquished by:
name:
date: 9/18/92 time: 0900
company: Extra Engineer, Inc.

received by:
name:
date: 9/18/92 time: 0900
company: CHEMRON
sample condition: 4°C

name:
date: time:
company:

name:
date: time:
company:
sample condition:

CHAIN OF CUSTODY

SAMPLE SITE: RANDOLPH AFB

AST #20 & #21

SAMPLER: STEVE VECTAR, E.I.T.
Extra Engineer, Inc.

sample ID	date	time	sample description
DC-1	9/22/92	940	DRILL CUTTINGS

ANALYTICAL INSTRUCTIONS:

TPH (418.1)
BTEX

relinquished by:

name: SDV

date: 9/22/92 time: 1108

company: Extra Engineer, Inc.

received by:

name:

date: 9/22 11:08 time:

company:

sample condition: INTACT 4°C

name:

date: time:

company:

name:

date: time:

company:

sample condition:

CHEMRON
INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (512) 340-8121

Client: Extra Engineer, Inc.
638-D W. Rhapsody
San Antonio, TX 78216

Client's Job #:
COC #:
Report Date: 09/24/92

Date & Time Received:
09/22/92, 11:08

Date Sampled:
09/22/92

CHEMICAL ANALYSIS REPORT

Chemron #	Sample Description	Date Analyzed	Total Dissolved Solids (MG/L)
412	Randolph AFB AST #21 MW13 Water Sample @ Monitor Well #13	09/24/92	572.

Approved By: R. Adams

Analytical Method: 160.1

CHEMRON
INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (512) 340-8121

Client: Extra Engineer, Inc.
638-D W. Rhapsody
San Antonio, TX 78216

Date Received: 09/22/92
Time Received: 11:08
Date Sampled: 09/22/92

Client's Job #:
Chain of Custody #:
Report Date: 09/24/92

CHEMICAL ANALYSIS REPORT

Chemron #	Sample Description	Sample Matrix	BTEX Analysis Date	Benzene (PPM)	Toluene (PPM)	Ethylbenzene (PPM)	Xylenes (PPM)	Total BTEX (PPM)	TPH Analysis Date	TPH (PPM)
20412	Randolph AFB AST #21 MW13 Water Sample @ Monitor Well #13	Water	09/23/92	.200	<.001	.006	<.001	0.206	09/24/92	4.9

Approved By: R. Oldham

Analytical Methods: BTEX in Soil or Water - 8020/AHS; TPH in Water - 418.1; TPH in Soil - 3540/418.1 or 3550/418.1

CHAIN OF CUSTODY

SAMPLE SITE: RANDOLPH AFB
AST #21

SAMPLER: STEVE VESELY, E.I.T.
Extra Engineer, Inc.

sample ID	date	time	sample description
MW 13	9/22/92	10:35	WATER SAMPLE @ MONITOR WELL #13

ANALYTICAL INSTRUCTIONS:

4°

BTEX, TPH
& TDS

relinquished by:	received by:
name: [signature]	name: [signature]
date: 9/22/92 time: 11:08	date: 9/22 time: 11:08
company: Extra Engineer, Inc.	company:
	sample condition: INTACT 4°C
name:	name:
date: time:	date: time:
company:	company:
	sample condition:

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9605062

Work Order Summary

CLIENT:	Mr. Kyle Caskey Parsons Engineering Science 8000 Centre Park Drive, Suite 200 Austin, TX 78754	**BILL TO:**	Mr. John Ratz Parsons Engineering Science 1700 Broadway, Suite 900 Denver, CO 80290
PHONE:	512-719-6000	**INVOICE #**	10360
FAX:	512-719-6099	**P.O. #**	726876.33110
DATE RECEIVED:	5/7/96	**PROJECT #**	726876.33110 Randolph AFB
DATE COMPLETED:	5/10/96	**AMOUNT$:**	$554.51

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRIC
01A	RA1-MPA-6	TO-3	0.5 "Hg	$120.0
02A	RA1-MPB-6	TO-3	0.5 "Hg	$120.0
03A	RA1-MPC-3	TO-3	2.0 "Hg	$120.0
04A	RA1-MPC-6	TO-3	1.5 "Hg	$120.0
05A	Lab Blank	TO-3	NA	NC

Misc. Charges	1 Liter Summa Canister Preparation (5) @ $10.00 each.	$50.0
	Shipping (4/24/96)	$24.5

CERTIFIED BY: Jordan L. Fauman

Laboratory Director

DATE: 5/10/96

180 BLUE RAVINE ROAD, SUITE B • FOLSOM, CA 95630
(916) 985-1000 • FAX (916) 985-1020

AIR TOXICS LTD.

SAMPLE NAME: RA1-MPA-6

ID#: 9605062-01A

EPA METHOD TO-3

(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6050808 **Date of Collection:** 5/3/96

Dil. Factor: 2.05 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	Not Detected	Not Detected
Toluene	0.002	0.008	0.004	0.015
Ethyl Benzene	0.002	0.009	Not Detected	Not Detected
Total Xylenes	0.002	0.009	0.013	0.057

TOTAL PETROLEUM HYDROCARBONS

GC/FID

(Quantitated as Gasoline)

File Name: 6050808 **Date of Collection:** 5/3/96

Dil. Factor: 2.05 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH* (C2+ Hydrocarbons)	0.021	0.085	1.1	4.6

*TPH referenced to Gasoline (MW=100)

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: RA1-MPB-6
ID#: 9605062-02A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6050809 **Date of Collection:** 5/3/96
Dil. Factor: 2.05 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.006	Not Detected	Not Detecte
Toluene	0.002	0.008	Not Detected	Not Detecte
Ethyl Benzene	0.002	0.009	Not Detected	Not Dete
Total Xylenes	0.002	0.009	0.003	0.013

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Gasoline)

File Name: 6050809 **Date of Collection:** 5/3/96
Dil. Factor: 2.05 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH* (C2+ Hydrocarbons)	0.020	0.083	1.7	7.1

*TPH referenced to Gasoline (MW=100)

Container Type: 1 Liter Summa Canister

APPENDIX

LABORATORY ANALYSES OF GROUNDWATER SAMPLES

AIR TOXICS LTD.

SAMPLE NAME: RA1-MPC-3
ID#: 9605062-03A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6050810 **Date of Collection:** 5/3/96
Dil. Factor: 2.16 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	0.005	0.016
Toluene	0.002	0.008	0.017	0.065
Ethyl Benzene	0.002	0.010	0.004	0.018
Total Xylenes	0.002	0.010	0.024	0.10

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Gasoline)

File Name: 6050810 **Date of Collection:** 5/3/96
Dil. Factor: 2.16 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH* (C2+ Hydrocarbons)	0.022	0.090	3.8	16

*TPH referenced to Gasoline (MW=100)

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: RA1-MPC-6

ID#: 9605062-04A

EPA METHOD TO-3

(Aromatic Volatile Organics in Air)

GC/PID

File Name:	**6050811**	**Date of Collection:**	**5/3/96**
Dil. Factor:	**2.13**	**Date of Analysis:**	**5/8/96**

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	0.014	0.045
Toluene	0.002	0.008	0.031	0.12
Ethyl Benzene	0.002	0.009	Not Detected	Not Detected
Total Xylenes	0.002	0.009	0.012	0.053

TOTAL PETROLEUM HYDROCARBONS

GC/FID

(Quantitated as Gasoline)

File Name:	**6050811**	**Date of Collection:**	**5/3/96**
Dil. Factor:	**2.13**	**Date of Analysis:**	**5/8/96**

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH* (C2+ Hydrocarbons)	0.021	0.087	3.4	14

*TPH referenced to Gasoline (MW=100)

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9605062-05A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6050806 **Date of Collection:** NA
Dil. Factor: 1.00 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Detected	Not Detected
Toluene	0.001	0.004	Not Detected	Not Detected
Ethyl Benzene	0.001	0.004	Not Detected	Not Detected
Total Xylenes	0.001	0.004	Not Detected	Not Detected

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Gasoline)

File Name: 6050806 **Date of Collection:** NA
Dil. Factor: 1.00 **Date of Analysis:** 5/8/96

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH* (C2+ Hydrocarbons)	0.010	0.042	Not Detected	Not Detected

*TPH referenced to Gasoline (MW=100)

Container Type: NA

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX: (916) 985-1020

CHAIN-OF-CUSTODY RECORD

No. 6N911

Page ___ of ___

Contact Person: Kyle Caskey / Brian Vandergrift
Company: Parsons ESG
Address: _____ City: Austin State: TX Zip: _____
Phone: 512-719-6000 FAX: _____
Collected By: Signature: Kyle Caskey

Project info:
P.O. #: 726876.3310
Project #: Same
Project Name: Randolph AFB

Turn Around Time:
☐ Normal
☐ Rush _____ Specify

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	RA1-MPA-6	5-3-96/11:40	TO3			0.5"Hg
02A	RA1-MPB-6	5-3-96/11:50	TO3			0.5"Hg
03A	RA1 MPC-3	5-3-96/12:15	TO3			1.0"Hg
04A	RA1 MPC 6	5-3-96/12:30	TO3			1.5"Hg

Relinquished By: (Signature) Date/Time: Kyle Caskey 5-3-96/1600 Print Name
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time: ATL 5/7/96 10:10

Notes:

Lab [redacted] Sampler Na[redacted] Air[redacted] O[redacted]d By: [redacted] Date/[redacted] [redacted]. (°C[redacted] Con[redacted] C[redacted]dy S[redacted]ntact[redacted] [redacted]k Or[redacted]

Figure

CHAIN OF CUSTODY RECORD

ENGINEERING-SCIENCE, INC.
1700 BROADWAY, SUITE 900
DENVER, COLORADO 80290
303-831-8100

AFCEE BIOVENTING PILOT TESTS

Base: Randolph

Site: 1 (Tank 20)

ES Job No.
DE268.33.00

Sampler(s): (Signature)
Brian Blicka
Russell Mann

Preservative: NONE | HOLD | AT 4C | NONE

Analysis Required: (PH) SW 9045 | (ALKA) A 403 | (IRON) SW 7380 | (MOIST) SW 846 | (BTEX) SW 8020 | (TRPH) E 418.1 | (TKN) E 351.2 | (PHOS) E 365.3 | (CLASS) UCM

Ship To:

ENGINEERING-SCIENCE LABORATORY
600 Bancroft Way
Berkeley, CA 94710

Attn: Tom Paulson
(510) 841-7353

Date	Time	Sample Description	Lab I.D.	No. of Contrs.	Sample Type	Matrix	Remarks
3-19-93	07:58	RA1-VW1-1		2	(a) C	SOIL	no TPH/BTEX
3-19-93	0825	RA1-VW1-5		1	(a) C	SOIL	TPH XBTEX only & moisture TP.
3-19-93	1600	RA1-MPA-1		3	(a) C	SOIL	
3-19-93	1714	RA1-MPA-9.5		3	(a) C	SOIL	
3-20-93	0740	RA1-MPB-5		3	(a) C	SOIL	
3-20-93	11:05	RA1-MPB(r)-5		1	(a) C	SOIL	TKN only
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	

Relinquished by: (Signature) Russell Mann — Date / Time 3/22/93 16:00

Received for Laboratory by: (Signature) FED EX — Date / Time

Relinquished by: (Signature) — Date / Time

Received for Laboratory by: (Signature) — Date / Time 03/24/93 0900

Remarks:

G - Grab Sample, C - Composite Sample

Distribution: Original Accompanies Shipment. Copies to: Coordinator Field Files

Federal Express Number:
Airbill Number: 419296072Z

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

11325 SUNRISE GOLD CIRCLE, SUITE 'E'
RANCHO CORDOVA, CA 95742
(916) 638-9892 • FAX (916) 638-9917

CHAIN OF CUSTODY RECORD

PROJECT # DE268.33.04 PO # DE268.33.08 COLLECTED BY (Signature) Russell Sims / Brian Blicker

REMARKS

	FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
01A	RA1-MPA-6	Canister # 12032	3/21/93 12:16	TO3 (BTEX/TPH)	2" Hg	
02A	RA1-MPA-6	Canister # 12366	3/21/93 12:23	TO3 (BTEX/TPH)	1" Hg	
03A	RA1-VW1	Canister # 12378	3/21/93 12:32	TO-3 (BTEX/TPH)	1.5" Hg	

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
Brian Blicker 3-23-93	TO FEDERAL EXPRESS		3/24/93

A. bill # 196890743

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP(°C)	CONDITION

REMARKS

pace
INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

May 3, 1993

Mr. Doug Downey
Engineering Science Inc.
1700 Broadway
Denver, CO 80290

RE: PACE Project No. 4908
Client Reference: AFCEE/Randolph

Dear Mr. Downey,

Enclosed is the report of laboratory analyses for samples received March 22, 1993.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Tom Paulson
Project Manager

Enclosures

BILLING OF INVOICE WILL FOLLOW

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

GC VOLATILES DATA PACKAGE

CASE NARRATIVE
WORK ORDER NO.4908
BY MODIFIED EPA METHOD 8020

Sample RA1-MPA-9.5 (4908-04) was diluted 1:2 prior to analysis. The sample was not reanalyzed without dilution because its holding time had expired.

ES-ENGINEERING SCIENCE, INC.
600 Bancroft Way
Berkeley,CA 9471

GC ANALYTICAL REPORT
Analytical Method
BTEX Aromatic Compounds

Work Order NO.:4908
% Moisture: 4.2

Client ID:RA1-VW1-5
Matrix:SOIL

Laboratory ID:4908-02
Level:MEDIUM

Date Collected: 03-19-93
Unit:ug/Kg

Dilution Factor: 5
Date Analyzed:03-31-93
Date Confirmed:NA

Compound	Result	Reporting Limit
Benzene	ND	310
Ethyl Benzene	ND	260
Toluene	1500	370
Xylenes (total)	1357	470

ND-Not Detected
NA-Not Applicable
D-Dilution Factor

ANALYST:

GROUP LEADER:

ES-ENGINEERING SCIENCE, INC.
600 Bancroft Way
Berkeley,CA 94710

GC ANALYTICAL REPORT
Analytical Method
BTEX Aromatic Compounds

Work Order NO.:4908 % Moisture: 6.7

Client ID:RA1-MPA-1 Matrix:SOIL

Laboratory ID:4908-03 Level:MEDIUM

Date Collected: 03-19-93 Unit:ug/Kg

Dilution Factor: 20 Date Analyzed:03-31-93
Date Confirmed:NA

Compound	Result	Reporting Limit
Benzene	ND	1300
Ethyl Benzene	13000	1100
Toluene	16000	1500
Xylenes (total)	130000	1900

ND-Not Detected
NA-Not Applicable
D-Dilution Factor

ANALYST: [signature]

GROUP LEADER: [signature] 4/22/93

ES-ENGINEERING SCIENCE, INC.
600 Bancroft Way
Berkeley,CA 94710

GC ANALYTICAL REPORT
Analytical Method
BTEX Aromatic Compounds

Work Order NO.:4908 % Moisture: 17

Client ID:RA1-MPA-9.5 Matrix:SOIL

Laboratory ID:4908-04 Level:LOW

Date Collected: 03-19-93 Unit:ug/Kg

Dilution Factor: 2 Date Analyzed:03-31-93
Date Confirmed:NA

Compound	Result	Reporting Limit
Benzene	ND	1.4
Ethyl Benzene	ND	1.2
Toluene	3.1	1.7
Xylenes (total)	ND	2.2

ND-Not Detected
NA-Not Applicable
D-Dilution Factor

ANALYST:

GROUP LEADER: 4/2

ES-ENGINEERING SCIENCE, INC.
600 Bancroft Way
Berkeley,CA 94710

GC ANALYTICAL REPORT
Analytical Method
BTEX Aromatic Compounds

Work Order NO.:4908 % Moisture: 14

Client ID:RA1-MPB-5 Matrix:SOIL

Laboratory ID:4908-05 Level:MEDIUM

Date Collected: 03-19-93 Unit:ug/Kg

Dilution Factor: 2 Date Analyzed:03-31-93
Date Confirmed:NA

Compound	Result	Reporting Limit
Benzene	ND	140
Ethyl Benzene	ND	120
Toluene	1200	160
Xylenes (total)	2000	210

ND-Not Detected
NA-Not Applicable
D-Dilution Factor

ANALYST: [signature]

GROUP LEADER: [signature] 4/22/93

ES-ENGINEERING SCIENCE, INC.

600 Bancroft W[illegible]
Berkeley,CA 94[illegible]

GC ANALYTICAL REPORT
Analytical Method
BTEX Aromatic Compounds

Work Order NO.:4908 % Moisture:NA

Client ID:(BLANK) Matrix:SOIL

Laboratory ID:MWVG2930331 Level:MEDIUM

Date Collected: NA Unit:ug/Kg

Dilution Factor: 1 Date Analyzed:03-31-93

Date Confirmed:NA

Compound	Result	Reporting Limit
Benzene	ND	60
Ethyl Benzene	ND	50
Toluene	ND	70
Xylenes (total)	ND	90

ND-Not Detected
NA-Not Applicable
D-Dilution Factor

ANALYST:

GROUP LEADER:

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley,CA 94710

GC ANALYTICAL REPORT
Analytical Method
BTEX Aromatic Compounds

Work Order NO.:4908 % Moisture:NA

Client ID:(BLANK) Matrix:SOIL

Laboratory ID:MSVG3930331B Level:LOW

Date Collected: NA Unit:ug/Kg

Dilution Factor: 1 Date Analyzed:03-31-93
Date Confirmed:NA

Compound	Result	Reporting Limit
Benzene	ND	0.6
Ethyl Benzene	ND	0.5
Toluene	ND	0.7
Xylenes (total)	ND	0.9

ND-Not Detected
NA-Not Applicable
D-Dilution Factor

ANALYST: [signature]

GROUP LEADER: [signature] 4/22/93

ES-ENGINEERING SCIENCE,INC.

600 BANCROFT WAY
BERKELEY, CA 94710

GC ANALYTICAL REPORT
ANALYTICAL REPORT
BTEX AROMATIC COMPOUNDS

MATRIX: SOIL

DATE:03-31-93

LABORATORY NO.	CLIENT ID	a-a-a-TriFluoro Toluene
~~MS HW~~VG3930331B	BLANK	110
~~SS SW~~VG3930331A	BLANK SPIKE	98
~~SS SW~~VG3930331B	BLANK SPIKE DUP	97
4908-04	RA1-MPA-9.5	108

S-ENGINEERING SCIENCE,INC.

600 BANCROFT WAY
BERKELEY, CA 94710

GC ANALYTICAL REPORT
ANALYTICAL REPORT
BTEX AROMATIC COMPOUNDS

ATRIX: SOIL

DATE:03-31-93

LABORATORY NO.	CLIENT ID	a-a-a-TriFluoro Toluene
MWVG2930331	BLANK	136
SWVG2930331A	BLANK SPIKE	95
SWVG2930331B	BLANK SPIKE DUP	95
4908-02	RA1-VW1-5	109
4908-03	RA1-MPA-1	97
4908-05	RA1-MPB-5	103

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley. CA 94710

QUALITY CONTROL RESULTS SUMMARY
ANALYTICAL REPORT
BTEX AROMATIC COMPOUNDS

Work Order No.: 4908

QC sample No.: SSVG3930331A&B Date analyzed:03-31-93

Matrix: SOIL Dilution factor: 1

COMPOUND	SA	SR	MS	MS PR	MSD	MSD PR	RPD	QC LIMITS	
8020 analysis	UG/L	UG/L	UG/L		UG/L			RPD	PR
Benzene	20	ND	18.8	94	19.4	97	3	29	39-150
Toluene	20	ND	18.4	92	19.2	96	4	28	46-148

MS = Spike sample
MSD = Spike sample duplicate
SR = Sample result
SA = Spike added
ND = Not Found At or Above Detection Limits

NC = Not calculated
NA = Not Applicable
** = Out of limits

RPD = 100 x (MS-MSD)/((MS+MSD)/2)

PR = 100 x ((MS or MSD) - SR)/SA

ANALYST:

QC:

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley. CA 94710

QUALITY CONTROL RESULTS SUMMARY
ANALYTICAL REPORT
BTEX AROMATIC COMPOUNDS

Work Order No.: 4908

QC sample No.: S8VG2930331A&B Date analyzed:03-31-93

Matrix: SOIL (MEDIUM) Dilution factor: 1

COMPOUND				MS		MSD		QC LIMITS	
8020 analysis	SA UG/L	SR UG/L	MS UG/L	PR	MSD UG/L	PR	RPD	RPD	PR
Benzene	2000	ND	1920	96	1960	98	2	29	39-150
Toluene	2000	ND	1910	96	1920	96	1	28	46-148

MS = Spike sample
MSD = Spike sample duplicate
SR = Sample result
SA = Spike added
ND = Not Found At or Above Detection Limits

NC = Not calculated
NA = Not Applicable
** = Out of limits

RPD = 100 x (MS-MSD)/((MS+MSD)/2)

PR = 100 x ((MS or MSD) - SR)/SA

ANALYST:

QC:

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
DATA PACKAGE

ES-ENGINEERING SCIENCE, INC.
600 Bancroft Way
Berkeley,CA 94710

ORGANIC ANALYTICAL REPORT

Work Order NO.: 4908

Matrix: Soil

Parameter: TPH

Unit: mg/Kg

Analytical Method: 418.1

Date Extracted: 03/25/93

QC Batch NO.: S93QCB015TPH

Date Analyzed: 03/27/93

Sample ID:	Client ID:	Result	Reporting Limit	Percent Moisture
4908-02	RA1-VW1-5	32	4	4.15
4908-03	RA1-MPA-1	851.8	4	6.72
4908-04	RA1-MPA-9.5	3.2	5	16.89
4908-05	RA1-MPB-5	17	5	14
MSTPH930325	METHOD BLANK	ND	4	NA

NA_ Not Analyzed
ND_ Not Detected

ANALYST: [signature]

GROUP LEADER: [signature]

ES-ENGINEERING SCIENCE, INC.

600 Bancroft Way
Berkeley. CA 94710

ORGANIC QUALITY CONTROL RESULTS SUMMARY
Blank Spike/Spike Duplicate

Work Order NO.: 4908

QC Sample NO.: SSTPH930325 A&B

Analytical Method: 418.1

Blank I.D.: MSTPH930325

Matrix: Soil

QC Batch NO.: S93QCB015TPH

Unit: mg/Kg

Parameter	Date Analyzed	BR	SA	BS	PR	BSD	PR	RPD
TPH	03/27/93	0	165	139	84	143	87	3

BS-Blank Spike
BSD-Blank Spike Duplicate
SA-Spike Added
BR_Blank Result
NA-Not Applicable
NC-Not Calculated
ND-Not Detected

RPD=((BS-BSD)/((BS+BSD)/2))*1(

PR=((BS OR BSD -BR)/SA)*100

ANALYST:

QUALITY CONTROL:

INORGANICS DATA PACKAGE

ES-ENGINEERING-SCIENCE, INC.
600 Bancroft Way
Berkeley, CA 94710

INORGANICS ANALYTICAL REPORT

Client: ES-Denver
Project: AFCEE

Work Order: 4908
Matrix: Solid

Client's ID:	R1A -VW1-1	R1A -VW1-5	R1A -MPA-1				
Sample Date:	03/19/93	03/19/93	03/19/93				
% Moisture:							
Lab ID:	4908.01	4908.02	4908.03				
Parameter	Results			Method	Normal Report Limit	Units	Date Analyzed
Alkalinity	400.	NR	240.	SM 403(M)	50	mg/Kg CaCO3	04/08/93
Moisture	9.4	4.2	6.7	ASTM D2216	.1	% by wt	04/07/93
pH	8.0	NR	8.1	EPA 9045	NA	pH Units	04/07/93

Note: Samples for alkalinity analysis were extracted using 10mL water for each 1g sample. These water extracts were analyzed for alkalinity, and the results were calculated in the solid on a dry-weight basis.

NA- Not Applicable
ND- Not Detected
NR- Analysis Not Requested

ANALYST: Don Gleaton

GROUP LEADER:

ES-ENGINEERING-SCIENCE, INC.

600 Bancroft Way
Berkeley, CA 9471

INORGANICS ANALYTICAL REPORT

Client: ES-Denver
Project: AFCEE

Work Order: 4908
Matrix: Solid

Client's ID:	R1A -MPA-9.5	R1A -MPB-5	Method	Normal Report Limit	Units	Date Anal
Sample Date:	03/19/93	03/20/93				
% Moisture:						
Lab ID:	4908.04	4908.05				
Parameter	----------Results----------					
Alkalinity	400.	330.	SM 403(M)	50	mg/Kg CaCO3	04/0
Moisture	16.9	14.0	ASTM D2216	.1	% by wt	04/0
pH	7.9	8.2	EPA 9045	NA	pH Units	04/0

Note: Samples for alkalinity analysis were extracted using 10mL water for each g
These water extracts were analyzed for alkalinity, and the results were cal
in the solid on a dry-weight basis.

NA- Not Applicable
ND- Not Detected

ANALYST: Don Gleaton

GROUP LEADER:

ES-ENGINEERING-SCIENCE, INC.
600 Bancroft Way
Berkeley, CA 94710

INORGANICS ANALYTICAL REPORT

Client: ES-Denver
Project: AFCEE

Work Order: 4908
Matrix: Solid

Client's ID: Prep Blank

Sample Date:
% Moisture:
Lab ID: Prep Blank

Parameter	Results	Method	Normal Report Limit	Units	Date Analyzed
Alkalinity	ND	SM 403(M)	50	mg/Kg CaCO3	04/08/93
Moisture	NA	ASTM D2216	.1	% by wt	04/07/93
pH	NA	EPA 9045	NA	pH Units	04/07/93

Note: Samples for alkalinity analysis were extracted using 10mL water for each 1g sample. These water extracts were analyzed for alkalinity, and the results were calculated in the solid on a dry-weight basis.

NA- Not Applicable
ND- Not Detected

ANALYST: Don Gleaton

GROUP LEADER: [signature]

ES-ENGINEERING-SCIENCE, INC.

600 Bancroft Way
Berkeley, CA 94710

INORGANIC QC SUMMARY - MS and MSD

Work Order: 4908

% Moisture: NA

Matrix: Solid

Units: mg/Kg CaCO3 (Alk)
% by wt. (Mois)
pH Units (pH)

Lab ID Spk/Dup:	Alkalinity Blank Spk	Moisture 4908.01	pH 4908.01
QC Batch:	452.70	489.53	453.85

Parameter	Date Analyzed MS/Dup	Unspiked Sample	MS/Sample	MSD/Dup	RPD	RPD QC Limit	-Conc Added- MS	MSD	Percent Recovered MS	MSD
Alkalinity	04/08/93	0.00	23700.00	23650.00	0	20	23650.00	23650.00	100	100
Moisture	04/07/93		9.40	7.95	17	20				
pH	04/07/93		8.00	8.05	1	20				

* or N = Outside QC Limit:

QC Limits for % Rec: 75 - 12

ANALYST: Don Gleaton Date 04/14/93 REVIEWER: [illegible] Date 4/21/93

File:M1QCMSWH

METALS DATA PACKAGE

CASE NARRATIVE
WORK ORDER NO. 4908
METALS

The serial dilution sample result for iron did not agree with the undiluted result within 10%, and the diluted result was greater than ten times the MDL for iron. All iron results in this batch are therefore flagged with "E".

Client ID's were abridged by the laboratory to facilitate computer entry of analytical data. The following should be used as a reference:

CLIENT ID	ABRIDGED ID
RA1-VW1-1	VW-1
RA1-MPA-1	MPA-1
RA1-MPA-9.5	MPA9.5
RA1-MPB-5	RA1MPB

Engineering Science - Berkeley Laboratory
Inorganics Report

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

RA1MPB

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Lab Sample ID: 4908.05___

Level (low/med): LOW__ Date Sampled : 03/20/93

% Solids: _86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	15500		E	P

Comments:

FORM I - IN

3/90

Engineering Science - Berkeley Laboratory
Inorganics Report

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

MPA9.5

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Lab Sample ID: 4908.04___

Level (low/med): LOW__ Date Sampled : 03/19/93

% Solids: _83.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	14500		E	P

Comments:

FORM I - IN

3/90

Engineering Science - Berkeley Laboratory
Inorganics Report

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

PBLANK

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Lab Sample ID: PB 503.60_

Level (low/med): LOW__ Date Sampled : 04/02/93

% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	4.6	U	E	P

Comments:

FORM I - IN

3/90

Engineering Science - Berkeley Laboratory
Inorganics Report

LABORATORY CONTROL SAMPLE (BLANK SPIKE)

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: [illegible]

Solid LCS Source: ESBL-LCSS___

Aqueous LCS Source: _____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	
Iron				100.0	90.8		80.0	120.0

Engineering Science - Berkeley Laboratory
Inorganics Report

LABORATORY CONTROL SAMPLE (BLANK SPIKE)

ab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

aD Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

olid LCS Source: ESBL-LCSS___

queous LCS Source: _____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Iron				100.0	87.5		80.0	120.0	87.5

Engineering Science - Berkeley Laboratory
Inorganics Report

BLANK SPIKE DUPLICATE

CLIENT SAMPLE ID: LCSSD

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Level (low/med): _LOW_

% Solids for Sample: 100.0 % Solids for Duplicate: 100.

Concentration Units (ug/L or mg/kg as received): MG/KG

Analyte	Control Limit	Blank Spike (S)	C	Blank Spike Duplicate (D)	C	RPD	Q	M
Iron		90.7690		87.5110		3.7		P

FORM VI - IN

3/90

Engineering Science - Berkeley Laboratory
Inorganic Report

ICP SERIAL DILUTION

EPA SAMPLE NO.

MPC-10L

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S_ SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Iron	89738.86		106192.84		18.3	E	P

Engineering Science - Berkeley Laboratory

Method Detection Limits (Annually)

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S_ SAS No.: _____ SDG No.: HVW-4_

ICP ID Number: TJA_61_____M Date: 08/31/92

Flame AA ID Number : _____ Matrix: SOIL_

Furnace AA ID Number : _____ (ug/L in 1.00g to 100ml digestate)

Analyte	Wave-length (nm)	Back-ground		MDL (ug/L)	M
Iron	271.44			46.0	P

Comments:

FORM X - IN

Engineering Science - Berkeley Laboratory
Inorganics Report

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

MPA-1

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Lab Sample ID: 4908.03___

Level (low/med): LOW__ Date Sampled : 03/19/93

% Solids: _93.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	13600		E	P

Comments:

FORM I - IN

3/90

Engineering Science - Berkeley Laboratory
Inorganics Report

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: VW1-1

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S SAS No.: _____ SDG No.: HVW-4_

Matrix (soil/water): SOIL_ Lab Sample ID: 4908.01___

Level (low/med): LOW__ Date Sampled : 03/19/93

% Solids: _90.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-89-6	Iron	6060		E	P

Comments:

FORM I - IN

3/90

Inorganics Report

PREPARATION LOG

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.:_4870S_ SAS No.: _____ SDG No.:HVW-4_

Method: P_

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
1MPA18	04/02/93	1.30	100
1MPB18	04/02/93	1.30	100
HVW-4	04/02/93	1.30	100
HVW4.5	04/02/93	1.31	100
LCSS	04/02/93	1.00	100
LCSSD	04/02/93	1.00	100
MPA-1	04/02/93	1.30	100
MPA-10	04/02/93	1.29	100
MPA-18	04/02/93	1.33	100
MPA9.5	04/02/93	1.30	100
MPB-18	04/02/93	1.33	100
MPB-5	04/02/93	1.30	100
MPC-10	04/02/93	1.29	100
MPC-12	04/02/93	1.28	100
MPC15	04/02/93	1.30	100
MPC3.5	04/02/93	1.30	100
MPD3.5	04/02/93	1.30	100
PA1MPA	04/02/93	1.30	100
PA2MPA	04/02/93	1.30	100
PBLANK	04/02/93	1.00	100
RA1MPB	04/02/93	1.31	100
VW-18	04/02/93	1.29	100
VW1-1	04/02/93	1.30	100

Engineering Science - Berkeley Laboratory
Inorganics Report

ANALYSIS RUN LOG

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN__

Lab Code: ESBL__ Case No.: 4870S_ SAS No.: _____ SDG No.:HVW-4_

Instrument ID Number: TJA 61 M_ Method: P_

Start Date: 04/14/93 End Date: 04/14/93

EPA Sample No.	D/F	Time	% R	Analytes FE
STD1	1.00	1556		X
STD2	1.00	1601		X
STD3	1.00	1605		X
STD4	1.00	1610		X
ICV	1.00	1615		X
ICB	1.00	1619		X
ICSA	1.00	1624		X
ICSAB	1.00	1628		X
CRI	1.00	1633		
ZZZZZZ	1.00	1638		
PBLANK	1.00	1642		X
LCSS	1.00	1647		X
LCSSD	1.00	1651		X
MPC-10	1.00	1656		X
MPC-10L	1.00	1701		X
MPC-12	1.00	1705		X
CCV	1.00	1710		X
CCB	1.00	1714		X
MPA-10	1.00	1719		X
MPB-5	1.00	1724		X
1MPA18	1.00	1728		X
1MPB18	1.00	1733		X
MPC15	1.00	1737		X
HVW4.5	1.00	1742		X
PA1MPA	1.00	1747		X
MPC3.5	1.00	1751		X
HVW-4	1.00	1756		X
PA2MPA	1.00	1800		X
CCV	1.00	1805		X
CCB	1.00	1810		X
MPD3.5	1.00	1814		X
VW1-1	1.00	1819		X

Engineering Science - Berkeley Laboratory
Inorganics Report

ANALYSIS RUN LOG

Lab Name: E_S__BERKELEY_LABORATORY_ Contract: YORKTOWN___

Lab Code: ESBL__ Case No.: 4870S_ SAS No.: _____ SDG No.: _____

Instrument ID Number: TJA 61 M_ Method: P_

Start Date: 04/14/93 End Date: 04/14/93

EPA Sample No.	D/F	Time	% R	Analytes F E
MPA-1	1.00	1823		X
MPA9.5	1.00	1828		X
RA1MPB	1.00	1833		X
VW-18	1.00	1837		X
MPA-18	1.00	1842		X
MPB-18	1.00	1846		X
CCV	1.00	1851		X
CCB	1.00	1856		X
ICSA	1.00	1900		X
ICSAB	1.00	1905		X
CRI	1.00	1909		
CCV	1.00	1914		X
CCB	1.00	1919		X

FORM XIV - IN

TOTAL PHOSPHORUS

TOTAL KJELDAHL NITROGEN

SOIL CLASSIFICATION

DATA PACKAGE

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Engineering Science, Inc.	Client Project ID:	4908	Sampled:	3/19-3/20/93
00 Bancroft Way	Sample Descript:	Soil	Received:	Mar 23, 1993
Berkeley, CA 94710	Analysis for:	Total Kjeldahl Nitrogen	Analyzed:	Apr 1, 1993
Attention: Tom Paulson	First Sample #:	3CA7401	Reported:	Apr 14, 1993

LABORATORY ANALYSIS FOR: Total Kjeldahl Nitrogen

Sample Number	Sample Description	Detection Limit mg/kg	Sample Result mg/kg
3CA7401	RAI-VW1-1	20	180
3CA7402	RAI-MPA-1	20	650
3CA7403	RAI-MPA-9.5	20	90
3CA7404	RAI-MPB-5	20	N.D.
3CA7405	RAI-BG-5	20	27

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Jennifer A. Nelson
Project Manager

Please Note:
Sample 3CA7405 result reported in dry weight.

SEQUOIA ANALYTICAL

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Engineering Science, Inc.	Client Project ID:	4908	Sampled:	3/
600 Bancroft Way	Sample Descript:	Soil	Received:	Mar
Berkeley, CA 94710	Analysis for:	Phosphorus	Analyzed:	Ap
Attention: Tom Paulson	First Sample #:	3CA7401	Reported:	Ap

LABORATORY ANALYSIS FOR: Phosphorus

Sample Number	Sample Description	Detection Limit mg/kg	Sample Result mg/kg
3CA7401	RAI-VW1-1	100	810
3CA7402	RAI-MPA-1	100	1,200
3CA7403	RAI-MPA-9.5	100	1,100
3CA7404	RAI-MPB-5	100	580

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Jennifer A. Nelson
Project Manager

SEQUOIA ANALYTICAL

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Engineering Science, Inc.	Client Project ID:	4908	Sampled:	Mar 20, 1993
600 Bancroft Way	Sample Descript:	Soil	Received:	Mar 23, 1993
Berkeley, CA 94710	Analysis for:	Total Solids	Analyzed:	Mar 25, 1993
Attention: Tom Paulson	First Sample #:	3CA7405	Reported:	Apr 14, 1993

LABORATORY ANALYSIS FOR: Total Solids

Sample Number	Sample Description	Detection Limit %	Sample Result %
3CA7405	RAI-BG-5	1.0	94

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Jennifer Nelson

Jennifer A. Nelson
Project Manager

SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

Engineering Science, Inc.	Client Project ID: 4908	
600 Bancroft Way	Matrix: Soil	
Berkeley, CA 94710		
Attention: Tom Paulson	QC Sample Goup: 3CA7405	Reported: Apr 14, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Total Solids
Method:	EPA 160.3
Analyst:	Y. Arteaga
Units:	%
Date:	3/25/93
Sample #:	3C98501
Sample Concentration:	81
Sample Duplicate Concentration:	81
% RPD:	0.0
Control Limits:	0-30

SEQUOIA ANALYTICAL

Jennifer Nelson

Jennifer A. Nelson
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Engineering Science, Inc.	Client Project ID:	4908	Sampled:	3/19-3/20/93
600 Bancroft Way	Sample Descript:	Soil, RAI-VW1-1	Received:	Mar 23, 1993
Berkeley, CA 94710	Method of Analysis:	ASTM D422-63	Analyzed:	Apr 5, 1993
Attention: Tom Paulson	Lab Number:	3CA7401	Reported:	Apr 14, 1993

PARTICLE SIZE DISTRIBUTION BY SIEVE AND HYDROMETER

SIEVE TEST

(A) TOTAL WEIGHT OF SAMPLE:	370.92g
(B) WEIGHT RETAINED IN NO. 10 SIEVE:	240.44g
(C) % PASSING NO. 10 SIEVE:	35.18

SIEVE TEST FOR WEIGHT RETAINED IN NO. 10 SIEVE

SIEVE SIZE	WEIGHT RETAINED, g	% RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING
1½m	0.0	0.0	0.0	0.0
3/8m	75.91	20.47	20.47	79.53
No. 4	81.82	22.06	42.53	57.47
No. 10	82.71	22.3	64.83	35.17
No. 200	59.42	16.02	80.85	19.15
PAN				
TOTAL				

IDEAL PAN = 0.0
IDEAL TOTAL = (B)

HYDROMETER TEST

ELAPSED TIME (T)	TEMP. °C	HYDROMETER READING (H)	CORRECTED READING (R)	(L)	PARTICLE DIAM. (S)	% SUSPENDED (P)
2	21	36	32	11.1	0.032	17.87
5	21	34	30	11.4	0.020	16.76
10	21	31	27	11.9	0.015	15.08
15	21	30	26	12.0	0.012	14.52
25	21	29	25	12.2	0.0094	13.96
40	21	28	24	12.4	0.0075	13.41
60	21	27	23	12.5	0.0062	12.85
90	21	26	22	12.7	0.0051	12.29
120	21	25	21	12.9	0.0044	11.73
1440	21	20	16	13.7	0.0013	8.94

WEIGHT OF SOIL USED IN HYDROMETER TEST (D):	65g
HYGROSCOPIC MOISTURE CORRECTION FACTOR (G):	0.969
SPECIFIC GRAVITY (ASSUMED):	2.65
DISPERSING AGENT CORRECTION FACTOR (E):	3
MENISCUS CORRECTION FACTOR (F):	1
TEMP./SPEC. GRAVITY DEPENDANT CONSTANT (K):	0.01348

FORMULAS:

$R = H - E - F$

$S = K [SQRT (L / T)]$

$P = (R / W) 100$

$W = (J \cdot 100) / C$

$J = D \cdot G$

SEQUOIA ANALYTICAL

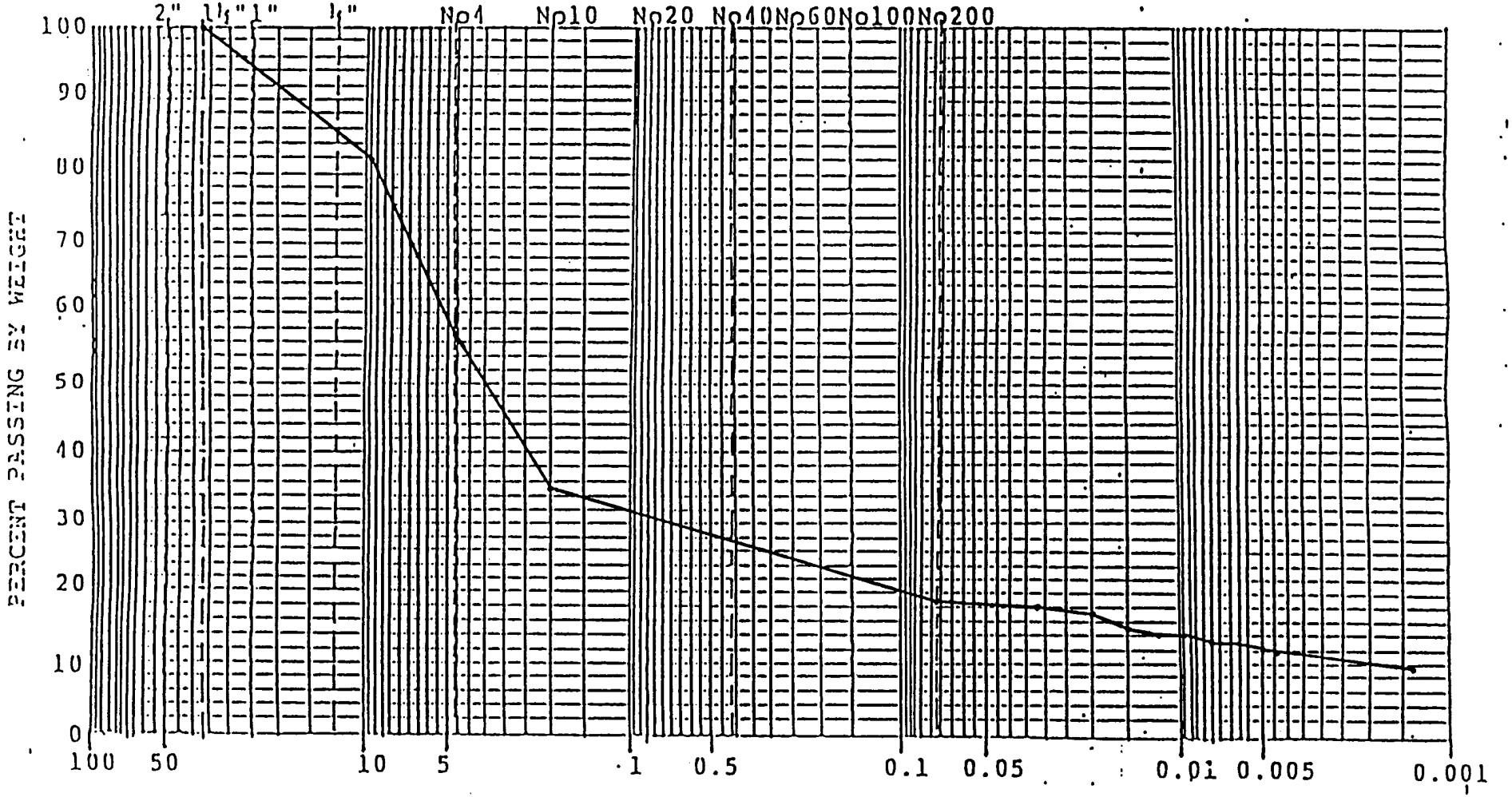
Jennifer A. Nelson
Project Manager

SAMPLE DESCRIPTION: 4908.01 E (RAI-VWI-1)

LABORATORY NUMBER: 3CA7401

SAND	38%
SILT	9%
CLAY	10%

U.S. STANDARD SIEVE SIZES



GRAIN DIAMETER IN MILLIMETERS

COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES
	GRAVEL		SAND			FINES	

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Engineering Science, Inc.	Client Project ID:	4908	Sampled: 3/19-3/20/93
600 Bancroft Way	Sample Descript:	Soil, RAI-MPA-1	Received: Mar 23, 1993
Berkeley, CA 94710	Method of Analysis:	ASTM D422-63	Analyzed: Apr 6, 1993
Attention: Tom Paulson	Lab Number:	3CA7402	Reported: Apr 14, 1993

PARTICLE SIZE DISTRIBUTION BY SIEVE AND HYDROMETER

SIEVE TEST

(A) TOTAL WEIGHT OF SAMPLE:	327.45g
(B) WEIGHT RETAINED IN NO. 10 SIEVE:	229.20g
(C) % PASSING NO. 10 SIEVE:	30.00

SIEVE TEST FOR WEIGHT RETAINED IN NO. 10 SIEVE

SIEVE SIZE	WEIGHT RETAINED, g	% RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING
1½m	0.0	0.0	0.0	0.0
3/8m	115.92	35.4	35.4	64.6
No. 4	65.00	19.85	55.25	44.75
No. 10	48.28	14.74	69.99	30.01
No. 200	18.82	5.75	75.74	24.26
PAN				
TOTAL				

IDEAL PAN = 0.0
IDEAL TOTAL = (B)

HYDROMETER TEST

ELAPSED TIME (T)	TEMP. °C	HYDROMETER READING (H)	CORRECTED READING (R)	(L)	PARTICLE DIAM. (S)	% SUSPENDED (P)
2	21	48	44	9.1	0.029	22.10
5	21	45	41	9.6	0.019	20.59
10	21	44	40	9.7	0.013	20.09
15	21	43	39	9.9	0.011	19.59
25	21	42	38	10.1	0.0086	19.08
40	21	41	37	10.2	0.0068	18.58
60	21	40	36	10.4	0.0056	18.08
90	21	39	35	10.6	0.0046	17.58
120	21	38	34	10.7	0.004	17.08
1440	21	29	25	12.2	0.0012	12.56

WEIGHT OF SOIL USED IN HYDROMETER TEST (D):	65g
HYGROSCOPIC MOISTURE CORRECTION FACTOR (G):	0.919
SPECIFIC GRAVITY (ASSUMED):	2.65
DISPERSING AGENT CORRECTION FACTOR (E):	3
MENISCUS CORRECTION FACTOR (F):	1
TEMP./SPEC. GRAVITY DEPENDANT CONSTANT (K):	0.01348

FORMULAS:
R = H - E - F
S = K [SQRT (L / T)]
P = (R / W) 100
W = (J · 100) / C
J = D · G

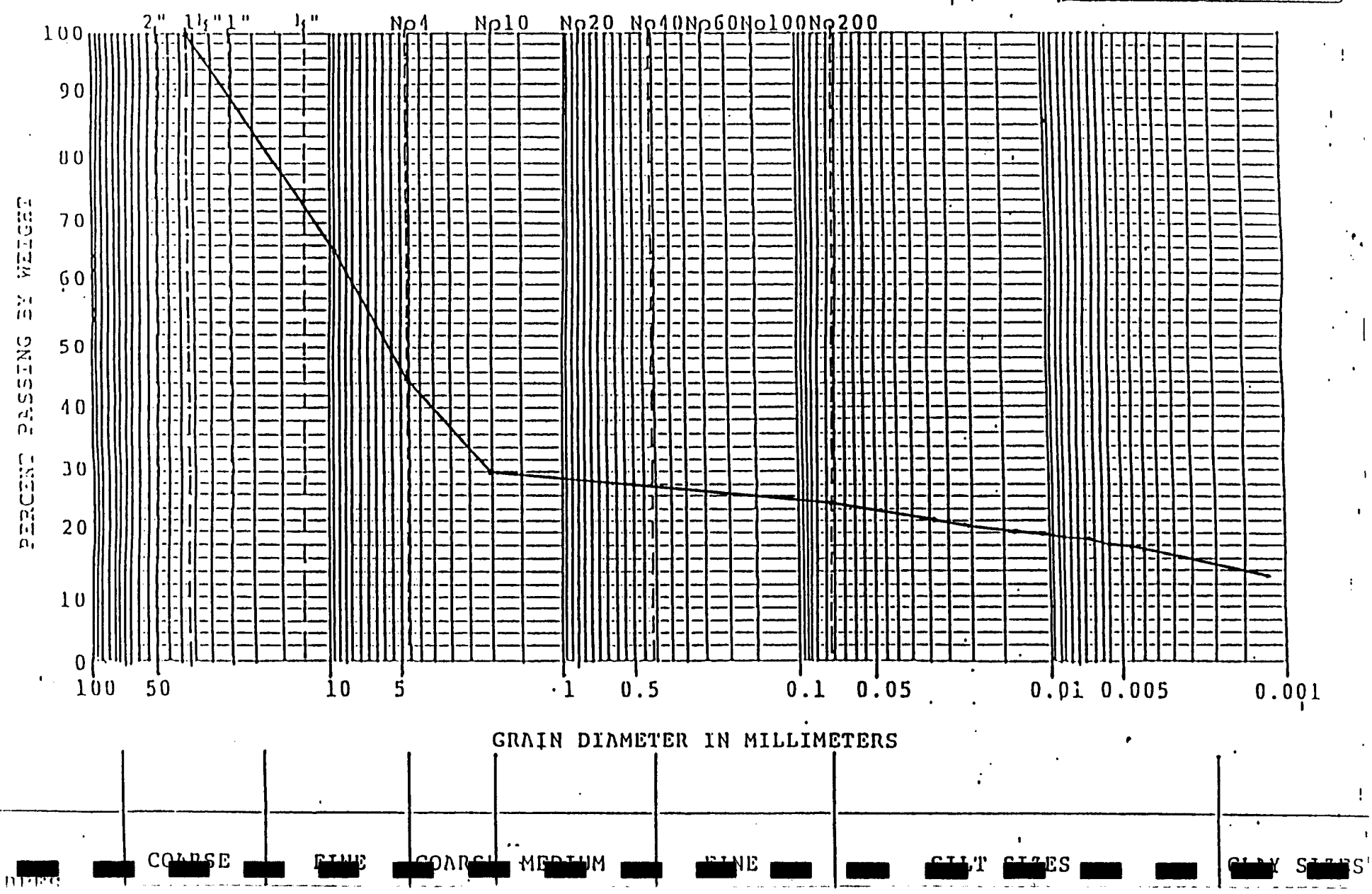
SEQUOIA ANALYTICAL

Jennifer A. Nelson
Project Manager

SAMPLE DESCRIPTION: 4908.03 C (RAI-MPA-1)

LABORATORY NUMBER: 3CA7402

SAND	10%
SILT	20%
CLAY	15%



SEQUOIA ANALYTICAL

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Engineering Science, Inc.	Client Project ID:	4908	Sampled: 3/19-3/20/93
600 Bancroft Way	Sample Descript:	Soil, RAI-MPA-9.5	Received: Mar 23, 1993
Berkeley, CA 94710	Method of Analysis:	ASTM D422-63	Analyzed: Apr 5, 1993
Attention: Tom Paulson	Lab Number:	3CA7403	Reported: Apr 14, 1993

PARTICLE SIZE DISTRIBUTION BY SIEVE AND HYDROMETER

SIEVE TEST

(A) TOTAL WEIGHT OF SAMPLE:	190.58g
(B) WEIGHT RETAINED IN NO. 10 SIEVE:	0.0g
(C) % PASSING NO. 10 SIEVE:	100

SIEVE TEST FOR WEIGHT RETAINED IN NO. 10 SIEVE

SIEVE SIZE	WEIGHT RETAINED, g	% RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING
1½m	0.0	0.0	0.0	100
3/8m	0.0	0.0	0.0	100
No. 4	0.0	0.0	0.0	100
No. 10	0.0	0.0	0.0	100
No. 200	3.17g	1.66	1.66	98.34
PAN				
TOTAL				

IDEAL PAN = 0.0
IDEAL TOTAL = (B)

HYDROMETER TEST

ELAPSED TIME (T)	TEMP. °C	HYDROMETER READING (H)	CORRECTED READING (R)	(L)	PARTICLE DIAM. (S)	% SUSPENDED (P)
2	21	49	45	8.9	0.028	73.11
5	21	48	44	9.1	0.018	71.48
10	21	45	41	9.6	0.013	66.61
15	21	45	41	9.6	0.011	66.61
25	21	43	39	9.9	0.0085	63.36
40	21	41	37	10.2	0.0068	60.11
60	21	40	36	10.4	0.0056	58.48
90	21	38	34	10.7	0.0046	55.24
120	21	37	33	10.9	0.0041	53.61
1440	21	30	26	12.0	0.0012	42.24

WEIGHT OF SOIL USED IN HYDROMETER TEST (D):	65g
HYGROSCOPIC MOISTURE CORRECTION FACTOR (G):	0.947
SPECIFIC GRAVITY (ASSUMED):	2.65
DISPERSING AGENT CORRECTION FACTOR (E):	3
MENISCUS CORRECTION FACTOR (F):	1
TEMP./SPEC. GRAVITY DEPENDANT CONSTANT (K):	0.01348

FORMULAS:

$R = H - E - F$

$S = K [SQRT (L / T)]$

$P = (R / W) 100$

$W = (J \cdot 100) / C$

$J = D \cdot G$

SEQUOIA ANALYTICAL

Jennifer Nelson

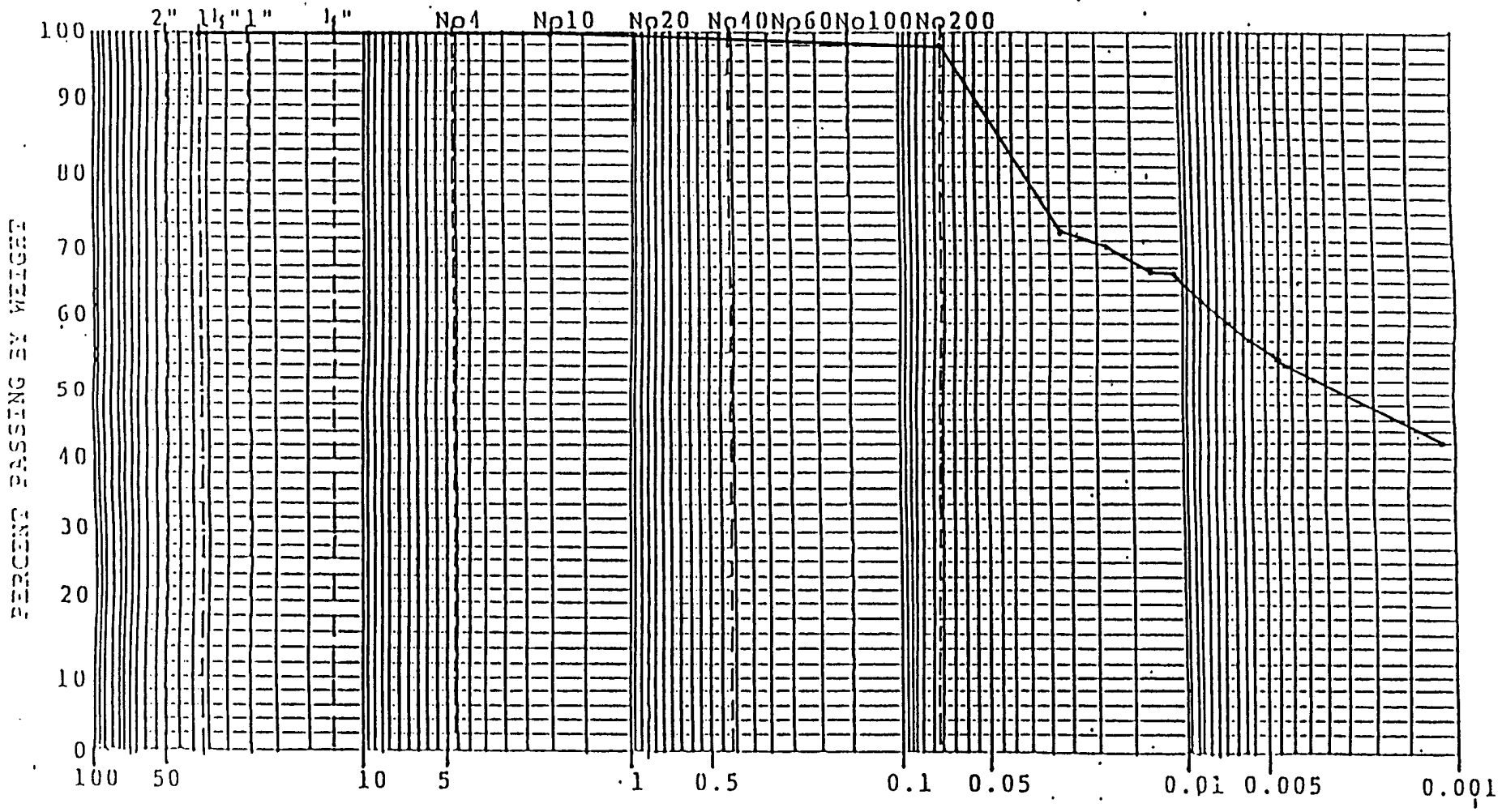
Jennifer A. Nelson
Project Manager

SAMPLE DESCRIPTION: 4908.04 C (RAI-MPA-9.5)

LABORATORY NUMBER: 3CA7403

GRAVEL	0%
SAND	2%
SILT	50%
CLAY	48%

U.S. STANDARD SIEVE SIZES



COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES
	GRAVEL		SAND			FINES	

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Engineering Science, Inc.	Client Project ID:	4908	Sampled: 3/19-3/20/93
600 Bancroft Way	Sample Descript:	Soil, RAI-MPB-5	Received: Mar 23, 1993
Berkeley, CA 94710	Method of Analysis:	ASTM D422-63	Analyzed: Apr 5, 1993
Attention: Tom Paulson	Lab Number:	3CA7404	Reported: Apr 14, 1993

PARTICLE SIZE DISTRIBUTION BY SIEVE AND HYDROMETER

SIEVE TEST

(A) TOTAL WEIGHT OF SAMPLE:	296.94g
(B) WEIGHT RETAINED IN NO. 10 SIEVE:	177.33g
(C) % PASSING NO. 10 SIEVE:	40.28

SIEVE TEST FOR WEIGHT RETAINED IN NO. 10 SIEVE

SIEVE SIZE	WEIGHT RETAINED, g	% RETAINED	CUMULATIVE % RETAINED	CUMULATIVE % PASSING
1½m	0.0	0.0	0.0	100
3/8m	86.47	29.12	29.12	70.88
No. 4	43.22	14.56	43.68	56.32
No. 10	47.64	16.04	59.73	40.27
No. 200	55.65	18.74	78.46	21.54
PAN				
TOTAL				

IDEAL PAN = 0.0
IDEAL TOTAL = (B)

HYDROMETER TEST

ELAPSED TIME (T)	TEMP. °C	HYDROMETER READING (H)	CORRECTED READING (R)	(L)	PARTICLE DIAM. (S)	% SUSPENDED (P)
2	21	36	32	11.1	0.032	20.01
5	21	31	27	11.9	0.021	16.88
10	21	28	24	12.4	0.015	15.01
15	21	23	19	13.2	0.013	11.88
25	21	19	15	13.8	0.01	9.38
40	21	15	11	14.5	0.0081	6.88
60	21	14	10	14.7	0.0067	6.25
90	21	12	8	15.0	0.0055	5.00
120	21	12	8	15.0	0.0048	5.00
1440	21	10	6	15.3	0.0014	3.75

WEIGHT OF SOIL USED IN HYDROMETER TEST (D):	65g
HYGROSCOPIC MOISTURE CORRECTION FACTOR (G):	0.991
SPECIFIC GRAVITY (ASSUMED):	2.65
DISPERSING AGENT CORRECTION FACTOR (E):	3
MENISCUS CORRECTION FACTOR (F):	1
TEMP./SPEC. GRAVITY DEPENDANT CONSTANT (K):	0.01348

FORMULAS:

$R = H - E - F$

$S = K [SQRT (L / T)]$

$P = (R / W) 100$

$W = (J \cdot 100) / C$

$J = D \cdot G$

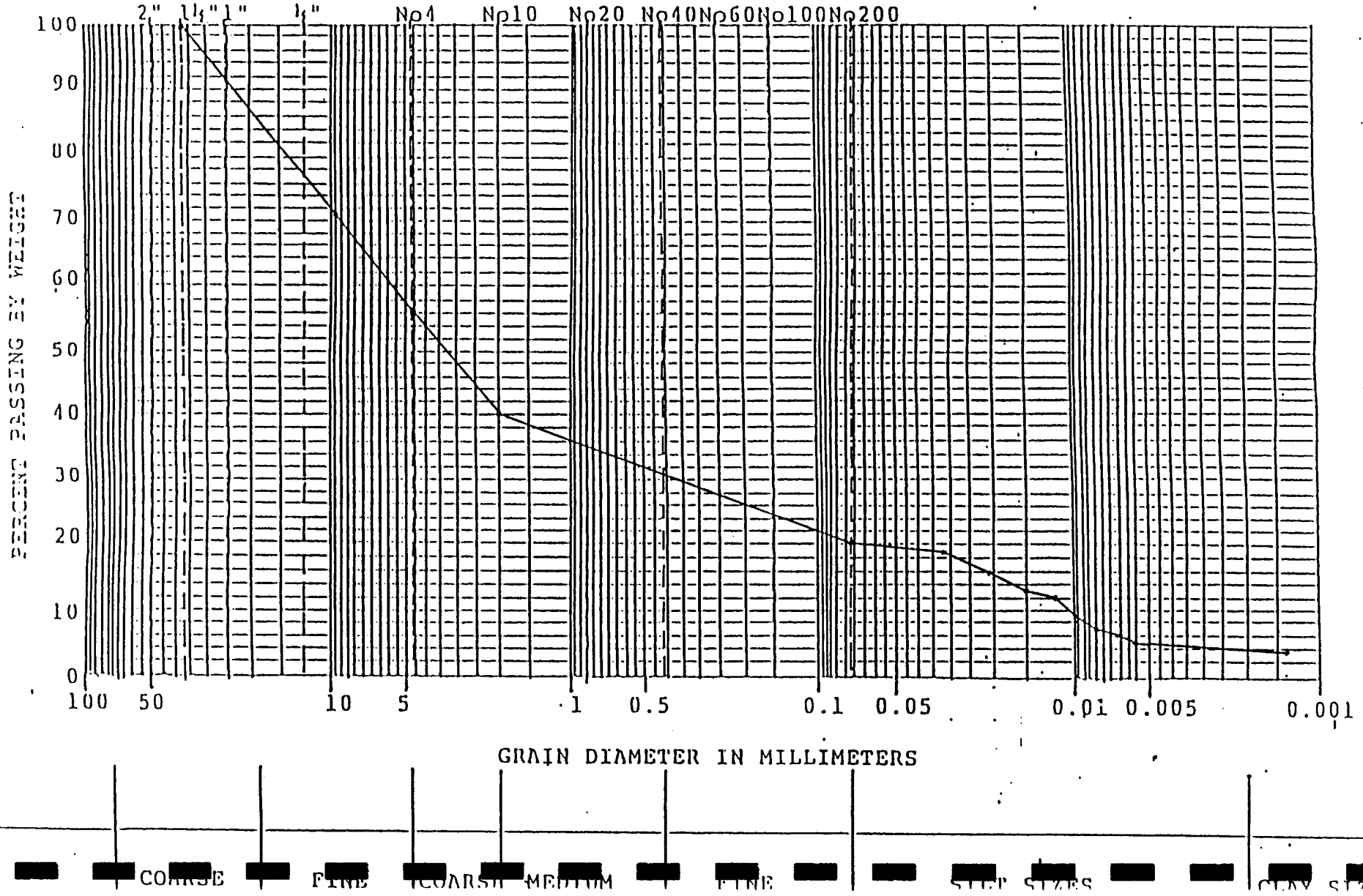
SEQUOIA ANALYTICAL

Jennifer A. Nelson
Project Manager

SAMPLE DESCRIPTION: 4908.05 C (RAI-MPB-5)

LABORATORY NUMBER: 3CA7404

[illegible]	44%
SAND	35%
SILT	17%
CLAY	4%



[redacted] CHAIN OF CUSTODY RECORD FOR WATER SAMPLES [redacted]

ES JOB NO.	PROJECT NAME/LOCATION 4908
FIELD CONTACT:	
SAMPLERS NAMES & SIGNATURES	

PRESERVATIVES REQUIRED

ANALYSES REQUIRED

DATE	TIME	FIELD SAMPLE IDENTIFIER	E 351.2 (TKN)	E 365.3 (PHOS)	4CM (CLASS) Sieve + Hyd.									REMARKS
3/19/93	0758	RA1-VW1-1 (4908.01B)	X	X	X			9303A74.01						REPORT TO TOM PAULSON
↓	1000	RA1-MPA-1 (4908.03C)	X	X	X						02			ESBL
↓	1714	RA1-MPA-9.5 (4908.04C)	X	X	X						03			
3/20/93	0740	RA1-MPB-5 (4908.05C)	X	X	X						04			Report sample
↓	1105	RA1-BG-5 (4908.06A)	X								05			RA1-BG-5 on dry basis.
		Relinquished By: Erin Vonmund 3/22/93 1220												

TO: SEQUOIA LAB.

FIELD CUSTODY RELINQUISHED BY: [redacted] DATE: 03/22/93 TIME: 11:10

SHIPPED VIA: AIRBILL # ON RECEIPT: CUSTODY SEALS? _____; TEMP: _____ °C

RECEIVED FOR LABORATORY BY: Erin Vonmund DATE: 3/23/93 TIME: 1130 AM

Received by: [redacted] 3-23-93/1130

Figure

CHAIN OF CUSTODY RECORD

Page 1 of 1

ENGINEERING-SCIENCE, INC.
1700 BROADWAY, SUITE 900
DENVER, COLORADO 80290
303-831-8100

AFCEE BIOVENTING PILOT TESTS

Base: Randolph

Site: 1 (Tank 20)

ES Job No.
DE268.33.08

Sampler(s): (Signature) Brian Blicker, Russell Sim

Preservative: NONE | HOLD | AT 4C | NONE

Analysis Required: SW 9045 (PH) | A 403 (ALKA) | SW 7380 (IRON) | SW 846 (MOIST) | SW 8020 (BTEX) | E 418.1 (TRPH) | E 351.2 (TKN) | E 365.3 (PHOS) | UCM (CLASS)

Ship To:

ENGINEERING-SCIENCE LABORATORY
600 Bancroft Way
Berkeley, CA 94710

Attn: Tom Paulson
(510) 841-7353

Date	Time	Sample Description	Lab I.D.	No. of Contrs.	Sample Type	Matrix	Remarks
3-19-93	07:58	RA1-VW1-1		2	(G) C	SOIL	no TPH/BTEX
3-19-93	0825	RA1-VW1-5		1	(G) C	SOIL	TPH XBTEX only & moisture
3-19-93	16:00	RA1-MPA-1		3	(G) C	SOIL	TP.
3-19-93	1714	RA1-MPA-9.5		3	(G) C	SOIL	
3-20-93	0740	RA1-MPB-5		3	(G) C	SOIL	
3-20-93	11:05	RA1-MPB-5		1	(G) C	SOIL	TKN only
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	
					G C	SOIL	

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks:
Russell Sim	3/20/93 16:00	FED EX		
[redacted]	Date / Time	Received for Laboratory by: (Signature)	Date / Time	[redacted]

9303162 Eng. Science

RECEIVED APR 1 0 1993

@ AIR TOXICS LTD.

RECEIVED APR 1 2 1993

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9303162

Work Order Summary

CLIENT: Mr. Tom Paulson
Engineering Science
600 Bancroft Way
Berkeley, CA 94710

BILL TO: Accounts Payable
Engineering Science
1700 Broadway, Ste. 900
Denver, CO 80290

PHONE: 510-841-7353
FAX: 510-548-7635
DATE RECEIVED: 3/26/93
DATE COMPLETED: 4/6/93

INVOICE # 0548
P.O. # DE268.33.09
PROJECT # DE268.33.04
AMOUNT$: $390.00

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRICE
01A	RA1-MPC-6	TO-3	2.0 "Hg	$120.00
02A	RA1-MPA-6	TO-3	1.0 "Hg	$120.00
03A	RA1-VW1	TO-3	1.5 "Hg	$120.00
04A	Lab Blank	TO-3	NA	NC

Misc. Charges	1 Liter SUMMA Canister Preparation (3) @ $10.00 each	$30.00

CERTIFIED BY: Linda D. Fruman
Laboratory Director

DATE: 4/6/93

11325 SUNRISE GOLD CIRCLE, SUITE E • RANCHO CORDOVA, CA 95742
(916) 638-9892 • FAX (916) 638-9917

AIR TOXICS LTD.

SAMPLE NAME: RA1-MPC-6
ID#: 9303162-01A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6032618 **Date of Collection:** 3/21/93
Dil. Factor: 1100 **Date of Analysis:** 3/26/9

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amou (uG/L)
Benzene	1.1	3.4	16	50
Toluene	1.1	4.0	Not Detected	Not Dete
Ethyl Benzene	1.1	4.7	4.9	21
Total Xylenes	1.1	4.7	21	89

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6032618 **Date of Collection:** 3/21/
Dil. Factor: 1100 **Date of Analysis:** 3/26/93

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amou (uG/L
TPH*	11	69	22000	140000

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: RA1-MPA-6
ID#: 9303162-02A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name:	6032619		Date of Collection: 3/21/93	
Dil. Factor:	1000		Date of Analysis: 3/26/93	
Compound	**Det. Limit (ppmv)**	**Det. Limit (uG/L)**	**Amount (ppmv)**	**Amount (uG/L)**
Benzene	1.0	3.1	21	66
Toluene	1.0	3.7	Not Detected	Not Detected
Ethyl Benzene	1.0	4.2	5.5	23
Total Xylenes	1.0	4.2	16	68

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name:	6032619		Date of Collection: 3/21/93	
Dil. Factor:	1000		Date of Analysis: 3/26/93	
Compound	**Det. Limit (ppmv)**	**Det. Limit (uG/L)**	**Amount (ppmv)**	**Amount (uG/L)**
TPH*	10	62	21000	130000

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: RA1-VW1
ID#: 9303162-03A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name:	6032620			Date of Collection: 3/21/93
Dil. Factor:	1100			Date of Analysis: 3/26/9
Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amoun (uG/L)
Benzene	1.1	3.4	11	34
Toluene	1.1	4.0	Not Detected	Not Detec
Ethyl Benzene	1.1	4.7	7.9	33
Total Xylenes	1.1	4.7	18	76

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name:	6032620			Date of Collection: 3/21/9
Dil. Factor:	1100			Date of Analysis: 3/26/93
Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amoun (uG/L)
TPH*	11	69	16000	100000

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9303162-04A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name:	6032605		Date of Collection: NA	
Dil. Factor:	1.0		Date of Analysis:	3/26/93
Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Detected	Not Detected
Toluene	0.001	0.004	Not Detected	Not Detected
Ethyl Benzene	0.001	0.004	Not Detected	Not Detected
Total Xylenes	0.001	0.004	Not Detected	Not Detected

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name:	6032605		Date of Collection: NA	
Dil. Factor:	1.0		Date of Analysis:	3/26/93
Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.062	Not Detected	Not Detected

*TPH referenced to Jet Fuel (MW=156)

Container Type: NA

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

11325 SUNRISE GOLD CIRCLE, SUITE 'E'
RANCHO CORDOVA, CA 95742
(916) 638-9892 • FAX (916) 638-9917

CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT # DE268.33.04 PO # DE268.33.08 COLLECTED BY (Signature) Russell Tinnea / Brian Blicker

REMARKS

FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
RA1-MPA-6	Canister # 12032	3/21/93 12:16	TO3 (BTEX/TPH)	2" Hg	
RA1-MPA-6	Canister # 12366	3/21/93 12:23	TO-3 (BTEX/TPH)	1" Hg	
RA1-VW1	Canister # 12378	3/21/93 12:32	TO-3 (BTEX/TPH)	1.5" Hg	

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
Brian Blicker 3-23-93	TO FEDERAL EXPRESS		A.T.L. 3/26/93 1400

A. bill # 1968907743

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP(°C)	CONDITION

REMARKS

XV DE 268.33.04

9303162 Eng. Science

RECEIVED APR 1 0 1993

@ AIR TOXICS LTD.

RECEIVED APR 1 2 1993

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9303162

Work Order Summary

CLIENT:	Mr. Tom Paulson Engineering Science 600 Bancroft Way Berkeley, CA 94710	**BILL TO:**	Accounts Payable Engineering Science 1700 Broadway, Ste. 900 Denver, CO 80290
PHONE:	510-841-7353	**INVOICE #**	0548
FAX:	510-548-7635	**P.O. #**	DE268.33.09
DATE RECEIVED:	3/26/93	**PROJECT #**	DE268.33.04
DATE COMPLETED:	4/6/93	**AMOUNT$:**	$390.00

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRICE
01A	RA1-MPC-6	TO-3	2.0 "Hg	$120.00
02A	RA1-MPA-6	TO-3	1.0 "Hg	$120.00
03A	RA1-VW1	TO-3	1.5 "Hg	$120.00
04A	Lab Blank	TO-3	NA	NC
Misc. Charges	1 Liter SUMMA Canister Preparation (3) @ $10.00 each			$30.00

CERTIFIED BY: Linda D. Fruman
Laboratory Director

DATE: 4/6/93

11325 SUNRISE GOLD CIRCLE, SUITE E • RANCHO CORDOVA, CA 95742
(916) 638-9892 • FAX (916) 638-9917

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Engineering Science, Inc.	Client Project ID: 4908	
600 Bancroft Way	Matrix: Soil	
Berkeley, CA 94710		
Attention: Tom Paulson	QC Sample Group: 3CA7401-04	Reported: Apr 14, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Total Kjeldahl Nitrogen	Phosphorus
Method:	EPA 351.4	EPA 365.3
Analyst:	N. Northey	K. Follett
Conc. Spiked:	4000	0.50
Units:	mg/kg	mg/kg
LCS Batch#:	LCS040193	LCS040593
Date Prepared:	4/1/93	4/5/93
Date Analyzed:	4/1/93	4/5/93
Instrument I.D.#:	N/A	N/A
LCS % Recovery:	95	99
Control Limits:	80-120	80-120
MS/MSD Batch #:	3CA7401	Blank
Date Prepared:	4/1/93	4/5/93
Date Analyzed:	4/1/93	4/5/93
Instrument I.D.#:	N/A	N/A
Matrix Spike % Recovery:	110	98
Matrix Spike Duplicate % Recovery:	103	98
Relative % Difference:	7.0	0.0

SEQUOIA ANALYTICAL

Jennifer Nelson

Jennifer A. Nelson
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9405137

Work Order Summary

CLIENT: Ms. Diana Schenfeld
Engineering Science, Inc.
1700 Broadway, Suite 900
Denver, CO 80290

BILL TO: Same

PHONE: 303-831-8100
FAX: 303-831-8208
DATE RECEIVED: 5/23/94
DATE COMPLETED: 5/27/94

INVOICE # 3708
P.O. # 722408.330608
PROJECT # 722408.330608 Randolph AFB
AMOUNT$: $199.11

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRICE
01A	RA1 MPA6	TO-3	1.5 "Hg	$120.00
02A	RA1 MPC3**	TO-3	NA	NC
03A	RA1 MPB6**	TO-3	NA	NC
04A	Lab Blank	TO-3	NA	NC

Misc. Charges	1 Liter SUMMA Canister Preparation (3) @ $10.00 each.	$30.00
	Shipping (5/10/94)	$49.11

LAB NARRATIVE:
Sample not analyzed per client's request.

CERTIFIED BY: Linda D Trueman
Laboratory Director

DATE: 5/27/94

AIR TOXICS LTD.

SAMPLE NAME: RA1 MPA6
ID#: 9405137-01A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6052417 Date of Collection: 5/16/94
Dil. Factor: 2.1 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	Not Detected	Not Detected
Toluene	0.002	0.008	Not Detected	Not Detected
Ethyl Benzene	0.002	0.009	Not Detected	Not Detected
Total Xylenes	0.002	0.009	0.063	0.28

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6052417 Date of Collection: 5/16/94
Dil. Factor: 2.1 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.021	0.14	53	340

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: RA1 MPC3**
ID#: 9405137-02A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: NA — Date of Collection: 5/16/94
Dil. Factor: 1.0 — Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Analyzed	Not Analyzed
Toluene	0.001	0.004	Not Analyzed	Not Analyzed
Ethyl Benzene	0.001	0.004	Not Analyzed	Not Analyzed
Total Xylenes	0.001	0.004	Not Analyzed	Not Analyzed

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: NA — Date of Collection: 5/16/94
Dil. Factor: 1.0 — Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Analyzed	Not Analyzed

*TPH referenced to Jet Fuel (MW=156)

**Sample not analyzed per client's request.

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: RA1 MPB6**
ID#: 9405137-03A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: NA
Dil. Factor: 1.0
Date of Collection: 5/16/94
Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Analyzed	Not Analyzed
Toluene	0.001	0.004	Not Analyzed	Not Analyzed
Ethyl Benzene	0.001	0.004	Not Analyzed	Not Analyzed
Total Xylenes	0.001	0.004	Not Analyzed	Not Analyzed

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: NA
Dil. Factor: 1.0
Date of Collection: 5/16/94
Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Analyzed	Not Analyzed

*TPH referenced to Jet Fuel (MW=156)

**Sample not analyzed per client's request.

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9405137-04A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6052411 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Detected	Not Detected
Toluene	0.001	0.004	Not Detected	Not Detected
Ethyl Benzene	0.001	0.004	Not Detected	Not Detected
Total Xylenes	0.001	0.004	Not Detected	Not Detected

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6052411 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Detected	Not Detected

*TPH referenced to Jet Fuel (MW=156)

Container Type: NA

9405137

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 • FAX (916) 985-1020

CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT # 722408.330608 PO # _____ COLLECTED BY (Signature) Byron Vandenberg

REMARKS Randolph AFB 12 month testing.

FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
RA1 MPA6	Canister # 11445	16 May 94 / 1640	TO-3 / BTEX, TVH	15 Hg	
RA1 MPC3	Canister # 9381 AT	16 May 94 / 1658	TO-3 / BTEX, TVH		
RA1 MPB6	Canister # 14514	16 May 94 / 1646	TO-3 / BTEX, TVH		

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
Byron Vandenberg 1500 19 May 94	5/23/94 9:20		

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY/DATE/TIME	TEMP(°C)	CONDITION
Fed-X	961409783O	5/23/94 9:20	Room	Good

REMARKS Custody Seal intact? Y N (None) Temp. Room

Copied 5/27/94

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

180 BLUE RAVINE ROAD
Suite B
Folsom, CA 95630

Phone (916) 985-1000
FAX (916) 985-1020
Hours 8:00 A.M. to 6:00 P.M. Pacific

COMPANY: Engineering Science - Denver

ATTENTION: Ms. Diana Schenfeld

FAX #: 303-831-8208

FROM: Rhonda Goodman, for operator

PAGES (Including cover) 6

COMMENTS: Work Order # 9405137

9405137 Engineering Science

WORK ORDER #: 9405137

Work Order Summary

CLIENT: Ms. Diana Schenfeld
Engineering Science, Inc.
1700 Broadway, Suite 900
Denver, CO 80290

BILL TO: Same

PHONE: 303-831-8100
FAX: 303-831-8208
DATE RECEIVED: 5/23/94
DATE COMPLETED:

INVOICE #
P.O. # 722408.330608
PROJECT # 722408.330608 Randolph AFB
AMOUNT$: $199.11

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRICE
01A	RA1 MPA6	TO-3	1.5 "Hg	$120.00
02A	RA1 MPC3**	TO-3	NA	NC
03A	RA1 MPB6**	TO-3	NA	NC
04A	Lab Blank	TO-3	NA	NC

Misc. Charges	1 Liter SUMMA Canister Preparation (3) @ $10.00 each.	$30.00
	Shipping (5/10/94)	$49.11

PRELIMINARY

LAB NARRATIVE:
Sample not analyzed per client's request.

CERTIFIED BY: Debbie Pierce for
Laboratory Director

DATE: 5-26-94

9405137 Engineering Science

AIR TOXICS LTD.

SAMPLE NAME: RA1 MPA6
ID#: 9405137-01A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6052417 Date of Collection: 5/16/94
Dil. Factor: 2.1 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	Not Detected	Not Detected
Toluene	0.002	0.008	Not Detected	Not Detected
Ethyl Benzene	0.002	0.009	Not Detected	Not Detected
Total Xylenes	0.002	0.009	0.063	0.28

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6052417 Date of Collection: 5/16/94
Dil. Factor: 2.1 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.021	0.14	53	340

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

9405137 Engineering Science

AIR TOXICS LTD.

SAMPLE NAME: RA1 MPC3**
ID#: 9405137-02A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: NA — Date of Collection: 5/16/94
Dil. Factor: 1.0 — Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Analyzed	Not Analyzed
Toluene	0.001	0.004	Not Analyzed	Not Analyzed
Ethyl Benzene	0.001	0.004	Not Analyzed	Not Analyzed
Total Xylenes	0.001	0.004	Not Analyzed	Not Analyzed

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: NA — Date of Collection: 5/16/94
Dil. Factor: 1.0 — Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Analyzed	Not Analyzed

*TPH refcrenced to Jet Fuel (MW=156)

**Sample not analyzed per client's request.

Container Type: 1 Liter SUMMA Canister

9405137 Engineering Science

AIR TOXICS LTD.

SAMPLE NAME: RA1 MPB6**
ID#: 9405137-03A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: NA — Date of Collection: 5/16/94
Dil. Factor: 1.0 — Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Analyzed	Not Analyzed
Toluene	0.001	0.004	Not Analyzed	Not Analyzed
Ethyl Benzene	0.001	0.004	Not Analyzed	Not Analyzed
Total Xylenes	0.001	0.004	Not Analyzed	Not Analyzed

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: NA — Date of Collection: 5/16/94
Dil. Factor: 1.0 — Date of Analysis: NA

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Analyzed	Not Analyzed

*TPH referenced to Jet Fuel (MW=156)

**Sample not analyzed per client's request.

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9405137-04A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6052411 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Detected	Not Detected
Toluene	0.001	0.004	Not Detected	Not Detected
Ethyl Benzene	0.001	0.004	Not Detected	Not Detected
Total Xylenes	0.001	0.004	Not Detected	Not Detected

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6052411 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 5/24/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Detected	Not Detected

*TPH referenced to Jet Fuel (MW=156)

Container Type: NA

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9406271

Work Order Summary

CLIENT: Ms. Diana Schenfeld
Engineering Science
1700 Broadway, Suite 900
Denver, CO 80290

BILL TO: Same

PHONE: 303-831-8100
FAX: 303-831-8208
DATE RECEIVED: 6/30/94
DATE COMPLETED: 7/1/94

INVOICE # 3982
P.O. # 722408.330608
PROJECT # 722408.330608 Randolph AFB
AMOUNT$: $130.00

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRICE
01A	RA1: MPC6	TO-3	4.0 "Hg	$120.00
02A	Lab Blank	TO-3	NA	NC

Misc. Charges	1 Liter SUMMA Canister Preparation (1) @ $10.00 each.	$10.00

CERTIFIED BY: Linda S. Truman
Laboratory Director

DATE: 7/6/94

180 BLUE RAVINE ROAD, SUITE B • FOLSOM, CA 95630
(916) 985-1000 • FAX (916) 985-1020

AIR TOXICS LTD.

SAMPLE NAME: RA1: MPC6
ID#: 9406271-01A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6070118 **Date of Collection:** 6/29/94
Dil. Factor: 2.3 **Date of Analysis:** 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	Not Detected	Not Detected
Toluene	0.002	0.009	Not Detected	Not Detected
Ethyl Benzene	0.002	0.010	0.094	0.41
Total Xylenes	0.002	0.010	0.38	1.7

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6070118 **Date of Collection:** 6/29/94
Dil. Factor: 2.3 **Date of Analysis:** 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.023	0.15	47	300

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9406271-02A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6070104 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Detected	Not Detected
Toluene	0.001	0.004	Not Detected	Not Detected
Ethyl Benzene	0.001	0.004	Not Detected	Not Detected
Total Xylenes	0.001	0.004	Not Detected	Not Detected

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6070104 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Detected	Not Detected

*TPH referenced to Jet Fuel (MW=156)

Container Type: NA

Engineering-Science Inc

Austin, Texas

FED EX BILL # 8441724395

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME/LOCATION
12-4198.32.0106	Randolph AFB 12 month Testing

SAMPLERS (Signatures): Rick Hendricks

SAMPLE NO.	DATE	TIME	MATRIX	SAMPLE DESCRIPTION	NO. OF CONTAINERS	Analysis Required: TO-2 / BTEX / TVH	REMARKS
RAL-011196	6/27/94	0915	AIR	Canister # 9262 AT	1	X	4.6 "Hg see press.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Rick Hendricks	6/29/94	1230	Federal Express	→			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
					6/30/94	955	[illegible]

"Relinquished by" and "Received by" boxes must be completed for all transfers.

White: laboratory returns with data, yellow: laboratory copy, pink: sampler copy

Custody Seal intact? Y N (None) Temp. Room

Condition when received good

9406271 Engineering Science

WORK ORDER #: 9406271

Work Order Summary

CLIENT: Ms. Diana Schenfeld
Engineering Science
1700 Broadway, Suite 900
Denver, CO 80290

BILL TO: Same

PHONE: 303-831-8100
FAX: 303-831-8208
DATE RECEIVED: 6/30/94
DATE COMPLETED:

INVOICE #
P.O. # 722408.330608
PROJECT # 722408.330608 Randolph AFB
AMOUNT$: $130.00

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	PRICE
01A	RA1: MPC6	TO-3	4.0 "Hg	$120.00
02A	Lab Blank	TO-3	NA	NC

Misc. Charges	1 Liter SUMMA Canister Preparation (1) @ $10.00 each.	$10.00

PRELIMINARY

CERTIFIED BY: Debbie Pearce for
Laboratory Director

DATE: 7-6-94

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

11325 SUNRISE GOLD CIRCLE, SUITE 'E'
RANCHO CORDOVA, CA 95742
(916) 638-9892 • FAX (916) 638-9917

CHAIN OF CUSTODY RECORD

PROJECT # DE268.33.04 PO # DE268.33.08 COLLECTED BY (Signature) Russell Bierman / Brian Blicker

REMARKS

FIELD SAMPLE I.D.#	SAMPLING MEDIA (Tenax, Canister etc.)	DATE/TIME	ANALYSIS	VAC./PRESSURE	LAB I.D. #
RA1-MPA-6	Canister # 12032	3/21/93 12:16	TO3 · (BTEX/TPH)		
RA1-MPA-6	Canister # 12366	3/21/93 12:23	TO-3 (BTEX/TPH)		
RA1-VW1	Canister # 12378	3/21/93 12:32	TO-3 (BTEX/TPH)		

RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME	RELINQUISHED BY: DATE/TIME	RECEIVED BY: DATE/TIME
Brian Blicker 3-23-93	TO FEDERAL EXPRESS		

A-bill # 1968907743

LAB USE ONLY

SHIPPER NAME	AIR BILL #	OPENED BY: DATE/TIME	TEMP(°C)	CONDITION

REMARKS

Figure

CHAIN OF CUSTODY RECORD

Page 1 of 1

ENGINEERING-SCIENCE, INC.
1700 BROADWAY, SUITE 900
DENVER, COLORADO 80290
303-831-8100

ES Job No.
DE268. 3 3 .08

AFCEE BIOVENTING PILOT TESTS

Base: Randolph

Site: 1 (Tank 20)

Sampler(s): (Signature) Brian Blicker

Ship To:

ENGINEERING-SCIENCE LABORATORY
600 Bancroft Way
Berkeley, CA 94710

Attn: Tom Paulson
(510) 841-7353

					Preservative											
					NONE				HOLD	AT 4C	NONE					
					Analysis Required											
Date	Time	Sample Description	Lab I.D.	No. of Contrs.	SW 9045 (PH)	A 403 (ALKA)	SW 7380 (IRON)	SW 846 (MOIST)	SW 8020 (BTEX)	E 418.1 (TRPH)	E 351.2 (TKN)	E 365.3 (PHOS)	UCM (CLASS)	Sample Type	Matrix	Remarks
-19-93	0958	RA1-VW1-1		2	X	X	X	X			X	X	X	[✓ G] C	SOIL	no TPH/BTEX
3-19-93	1325	RA1-VW1-5		1					X					[✓ G] C	SOIL	TPH/BTEX only
3-19-93	1600	RA1-MPA-1		3	X	X	X	X	X		X	X	X	[✓ G] C	SOIL	
-19-93	1714	RA1-MPA-9.5		3	X	X	X	X	X		X	X	X	[✓ G] C	SOIL	
3-20-93	1740	RA1-MPB-5		3	X	X	X	X	X		X	X	X	[✓ G] C	SOIL	
3-20-93	1105	RA1-KBG-5		1							X			[✓ G] C	SOIL	TKN Only
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	
														G C	SOIL	

Relinquished by: (Signature)	Date / Time	Recieved for Laboratory by: (Signature)	Date / Time	Remarks:
Relinquished by: (Signature)	Date / Time	Recieved for Laboratory by: (Signature)	Date / Time	

[redacted] - Gr[redacted]mple, [redacted]omp[redacted]Samp[redacted]

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

1968907743

2022M 1968907743

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 0802-1999-7
Date: 3-23-93

From (Your Name) Please Print: Brian Blcher
Your Phone Number (Very Important): (303) 831-9100
Company: ENGINEERING SCIENCE INC
Department/Floor No.:
Street Address: 1700 BROADWAY STE 900
City: DENVER
State: CO
ZIP Required: 8 0 2 9 0

2 To (Recipient's Name) Please Print: Bob Freeman
Recipient's Phone Number (Very Important): (916) 638-939
Company: A-Tox-cs
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 11325 Sunrise Gold Circle, Suite E
City: Rancho Cordova, CA
State:
ZIP Required: 95742

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City:
State:
ZIP Required:

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card
5 [ ] Cash/Check Acct./Credit Card No. Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning †)		Standard Overnight (Delivery by next business afternoon †)	
11	[ ] YOUR PACKAGING	51	[ ] YOUR PACKAGING
16	[ ] FEDEX LETTER *	56	[ ] FEDEX LETTER *
12	[ ] FEDEX PAK *	52	[ ] FEDEX PAK *
13	[ ] FEDEX BOX	53	[ ] FEDEX BOX
14	[ ] FEDEX TUBE	54	[ ] FEDEX TUBE
Economy Two-Day (Delivery by second business day †)		Government Overnight (Restricted to authorized users only)	
30	[X] ECONOMY	46	[ ] GOVT LETTER
		41	[ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT ** (Carrinad reservation required)
80 [ ] TWO-DAY FREIGHT **
† Delivery commitment may be later in some areas
*Declared Value Limit $100
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [X] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations) [ ]
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE ____ Lbs.
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
11 [ ] DESCRIPTION
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

	PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
	1	7	
	Total 1	Total 7	Total

DIM SHIPMENT (Chargeable Weight)
[ ] ____ lbs.
L x W x H =

Received At
1 [ ] Regular Stop 3 [ ] Drop Box
2 [ ] On-Call Stop 4 [ ] B.S.C. 5 [ ] Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $100.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

7 Release Signature:
FedEx Emp. No.
Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 12/91
FORMAT #099
099

9406271 Engineering Science

AIR TOXICS LTD.

SAMPLE NAME: RA1: MPC6
ID#: 9406271-01A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6070118 Date of Collection: 6/29/94
Dil. Factor: 2.3 Date of Analysis: 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.002	0.007	Not Detected	Not Detected
Toluene	0.002	0.009	Not Detected	Not Detected
Ethyl Benzene	0.002	0.010	0.094	0.41
Total Xylenes	0.002	0.010	0.38	1.7

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6070118 Date of Collection: 6/29/94
Dil. Factor: 2.3 Date of Analysis: 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.023	0.15	47	300

*TPH referenced to Jet Fuel (MW=156)

Container Type: 1 Liter SUMMA Canister

9406271 Engineering Science

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9406271-02A

EPA METHOD TO-3
(Aromatic Volatile Organics in Air)

GC/PID

File Name: 6070104 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.001	0.003	Not Detected	Not Detected
Toluene	0.001	0.004	Not Detected	Not Detected
Ethyl Benzene	0.001	0.004	Not Detected	Not Detected
Total Xylenes	0.001	0.004	Not Detected	Not Detected

TOTAL PETROLEUM HYDROCARBONS
GC/FID
(Quantitated as Jet Fuel)

File Name: 6070104 Date of Collection: NA
Dil. Factor: 1.0 Date of Analysis: 7/1/94

Compound	Det. Limit (ppmv)	Det. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
TPH*	0.010	0.065	Not Detected	Not Detected

*TPH referenced to Jet Fuel (MW=156)

Container Type: NA

ATTACHMENT 18

Waste Disposal Records

MOBLEY COMPANY
UST REMEDIATION FLUID / OFF-SPECIFICATION PRODUCT MANIFEST

No. 05

CHARACTERIZATION INFORMATION

Generating Facility Name: RANDOLPH AFB.

Generating Facility Address: FM 78. Bldg #642.

Business Name:

Mailing Address:

Telephone ( )

Contractor Name/Contact: EXTRA ENGINEER.

Process Generating the Fluid (Check the Appropriate Process/Fluid Type):

Underground Storage Tank Remediation/Corrective Action Fluid
- ☐ Unleaded Gasoline
- ☐ Diesel
- ☐ Aviation Fuel
- ☐ Tank Hold Evacuation
- ☑ UST Monitoring Well Fluid
- ☐ Used Motor Oil from Vehicle Maintenance Facility*

*Used oil from industrial and manufacturing sites requires pre-approval

Off-Specification Product (Reclamation for Originally Intended Purpose)
- ☐ Unleaded Gasoline
- ☐ Diesel
- ☐ Aviation Fuel

Total Quantity (Gallons): 150 Bulk ( ) Drum Evacuation (3)

Generator Representative (Print): Arce Pulliam Signature: Arce Pulliam

Title: Fuel Operator Date of Service: 25-Sept-92

TRANSPORTER INFORMATION

Name Mobley Co., Inc. Telephone 800-999-8628

EPA Transporter ID TXD000807925 State ID 40303 Truck No. 20

Driver's Name (Print) MANUEL GARCIA

9/15/92 Date

Manuel Garcia Driver's Signature

MOBLEY COMPANY RECYCLING FACILITY

☐ Kilgore Oil Recycling

Address Wickes St.

City/State: Kilgore, TX 75662

Telephone: 903-984-5761

EPA ID TXD982560005 TWC Reg. No. 38224

☐ Corsicana Fuel Reclamation

Address: Highway 31 East

City/State: Corsicana, TX 75110

Telephone: 903-874-1188

EPA ID TXD988059291 TWC Reg. No. 20

I certify that I have received into this facility the above listed product.

Facility Operator's Name (Print)

Date Received

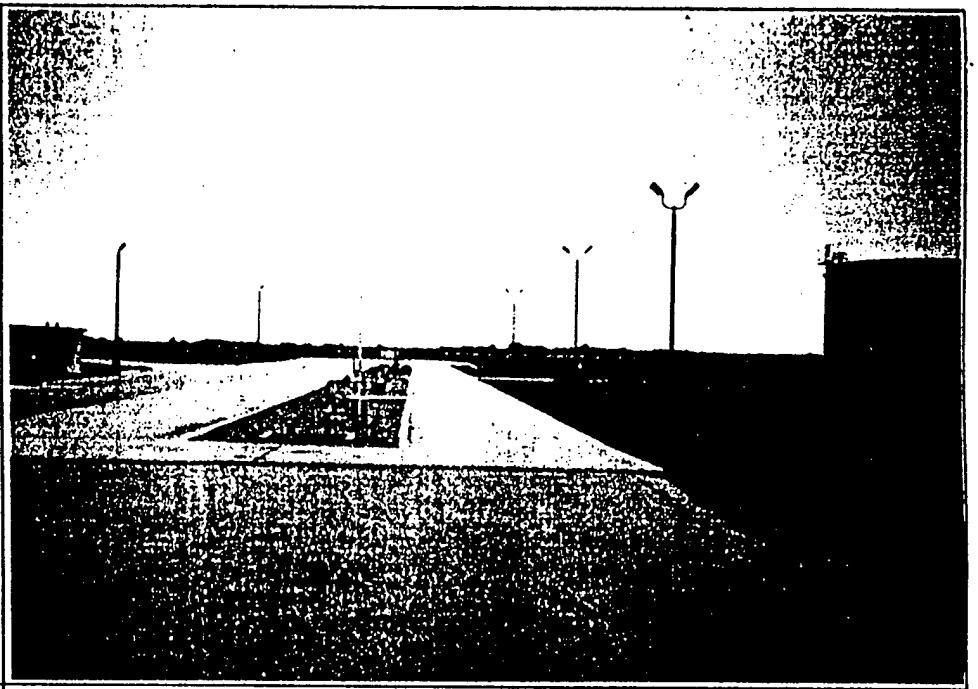
Facility Operator's Signature

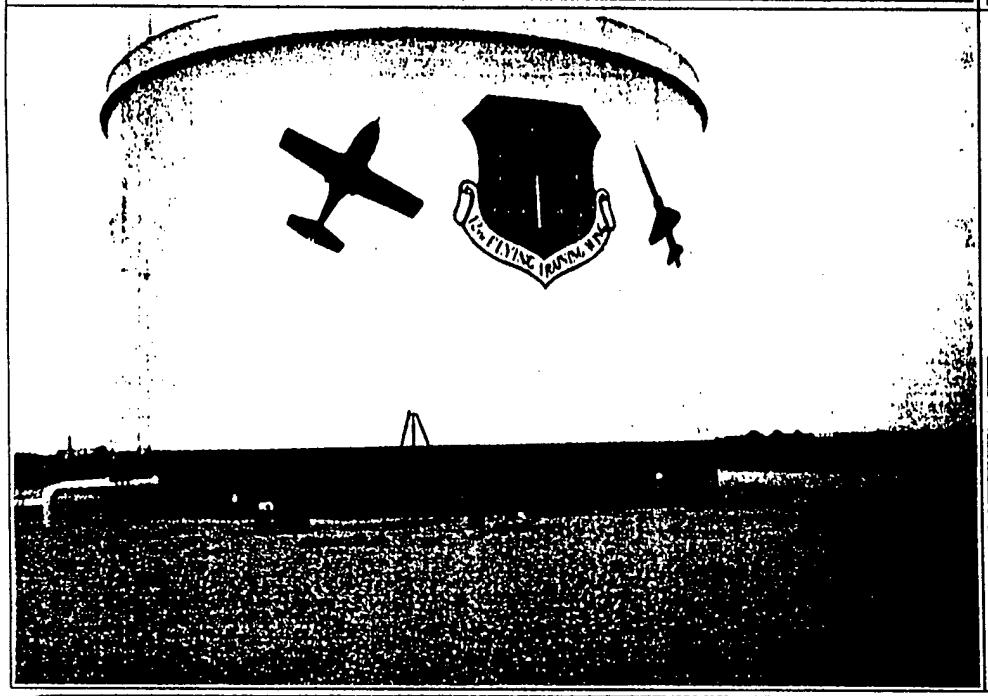
White - Generator - Original Canary - TSD Pink - Transporter Gold - Generator's 1st Copy

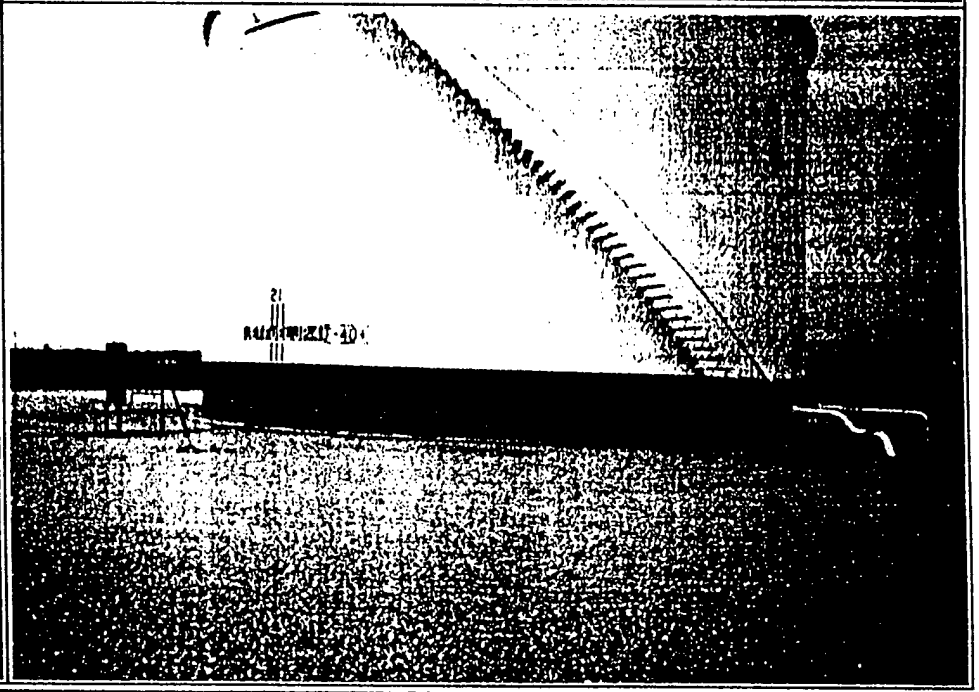
THE PRINT SHOP-MARSHALL

ATTACHMENT 19

Photographic Documentation





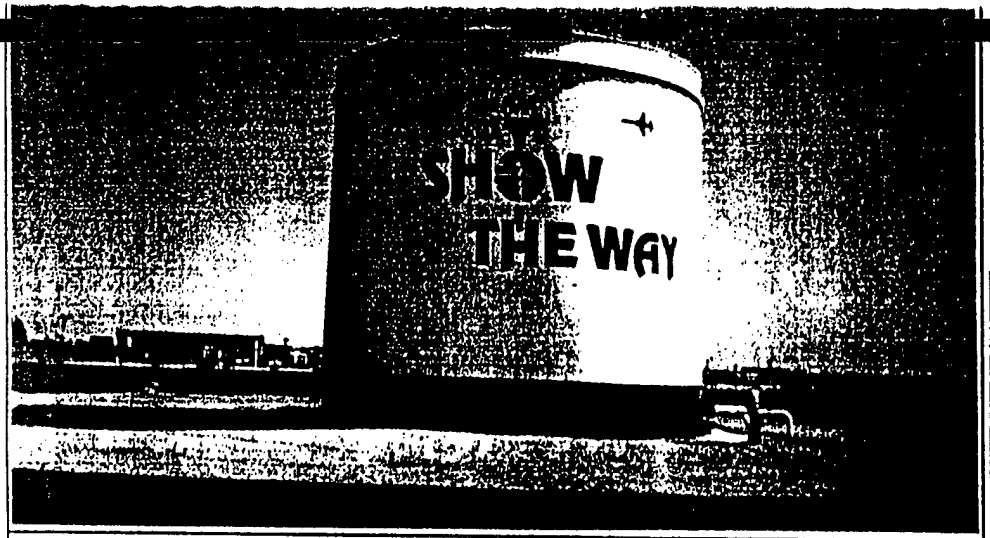


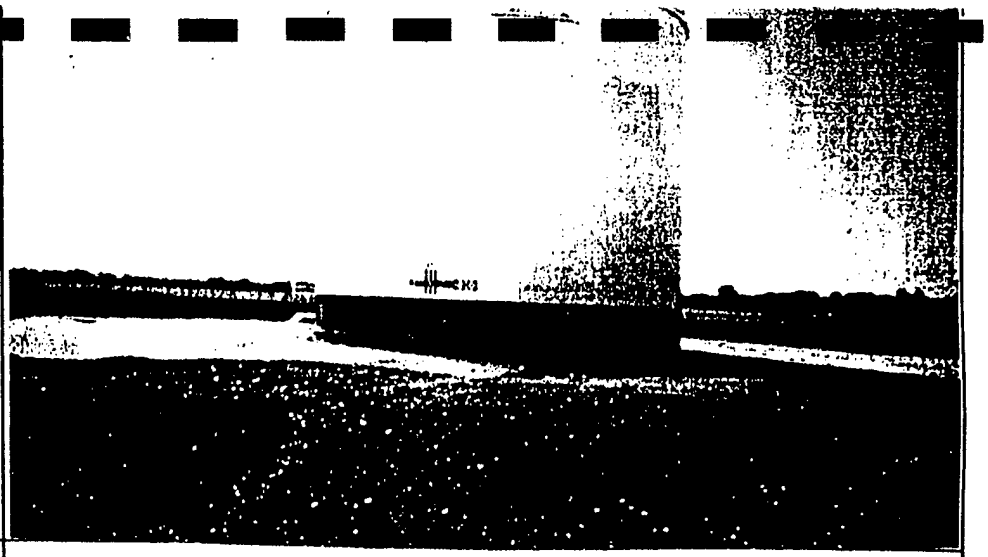
RANDOLPH AIR FORCE BASE
BEXAR COUNTY, TEXAS

southwest view of project site; bldgs. 1042 & 1043 in foreground (08/27/92) | (08/27/92) southwest view of fuel unloading pump complex; tank #21 on right

SITE PHOTOGRAPHS

extra ENGINEER, inc.
Environmental Services





RANDOLPH AIR FORCE BASE
BEXAR COUNTY, TEXAS

south view of tank #20 (08/27/92) | (08/27/92) northwest view of tank #20

backfilled and bentonite capped borehole B8 (08/27/92)

SITE PHOTOGRAPHS

extra ENGINEER, inc.
Environmental Services

ATTACHMENT 20

Site Closure Request

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
PETROLEUM STORAGE TANK DIVISION

LPST SITE CLOSURE REQUEST FORM

is form is to be used to request closure for Leaking Petroleum Storage Tank (LPST) cases. The soil and groundwater cleanup als must be met prior to submitting this form. These cleanup goals should be derived from either:

- the TWC *Guidance Manual for LPST Cleanups in Texas*, January 1990 so long as these goals were achieved prior to November 8, 1995, or
- the TNRCC *Risk-Based Corrective Action for Leaking Storage Tank Sites* document, January 1994 (RG-36).

Submission of this Site Closure Request constitutes certification by the Responsible Party, Corrective Action Specialist (CAS), and Corrective Action Project Manager (CAPM) that all necessary corrective actions have been completed and final closure of the subject site is appropriate at this time. By signing this Site Closure Request, the Responsible Party, CAS, and CAPM acknowledges that no further corrective actions, with the exception of activities subsequently approved by the TNRCC, will be eligible for reimbursement after the RP's signature date. Although costs for activities such as groundwater monitoring or remediation system operation and maintenance may have been approved for an annual period, these activities should cease upon submission of the Site Closure Request as these activities will not be considered eligible for reimbursement beyond the date of the Site Closure Request. Additionally, any costs relating to site assessment or other corrective action activities will not be eligible for reimbursement if the activities are conducted after the date of the Site Closure Request, unless specifically approved by the TNRCC. If, upon review by the TNRCC, the TNRCC concurs that the site meets the conditions for final closure, the costs for closure activities necessary to restore the site to its original condition will be reviewed and approved as appropriate. If the TNRCC determines that the site does not meet the conditions for final closure, the TNRCC will request a workplan and cost proposal for the next appropriate corrective action activity necessary to proceed towards final closure unless appropriate activities have previously been approved. The only type of proposal that should be attached to the Site Closure Request is for site closure costs. Any proposals attached to the Site Closure Request for activities other than site closure will not be processed and will be withdrawn from consideration.

If any of the following apply, the site is not ready for closure and this form should not be submitted:

- **The appropriate LPST cleanup goals have not been met (a proposal for the next appropriate step should be submitted instead);**
- **Phase-separated hydrocarbons (>0.1 feet) currently exist at the site;**
- **The contaminant plume is increasing in size; or**
- **All wastes and other material generated from the site have not been properly disposed;**

Do not use this form:

- **if the release was not from a regulated underground or aboveground storage tank;**
- **for tank removal-from-service activities not associated with an LPST site (use the *Release Determination Report Form* (TNRCC-0621) or other appropriate format);**
- **for situations where the second set of confirmation samples collected during tank removal-from-service activities confirms suitability for closure (use the *Release Determination Report Form* (TNRCC-0621) or other appropriate format); or**
- **for shutdown of remediation systems or for plugging of monitor wells when site closure is not yet appropriate.**

If asked to initiate additional activities, submit a workplan and preapproval request for those activities on sites eligible for reimbursement. Please review the document entitled *Preapproval for Corrective Action Activities* (RG-111) for procedures on preapproval requests and the other PST guidance pamphlets and rules for additional information on LPST sites.

Complete all blanks and check "yes" or "no" for all inquiries. IF A COMPLETED *ASSESSMENT REPORT FORM* (TNRCC-0012) WAS PREVIOUSLY SUBMITTED, YOU DO NOT NEED TO ANSWER THE QUESTIONS WITHIN THE DARK OUTLINED AREAS UNLESS THE INFORMATION HAS CHANGED. If the question is not applicable to this site, indicate with N/A. If the answer to the question is unknown, please indicate. If space for supplemental information is needed, insert numbered footnote and provide brief supporting discussion in Section VI, Justification for Closure.

III. RELEASE ABATEMENT/REMEDIATION

e Release Discovered: _____

stance(s) released: (check all that apply) ☐ Gasoline ☐ Alcohol-blended fuel (Type and percentage of alcohol: _____)
)iesel ☐ Used Oil ☒ Jet Fuel (type: JP-4) ☐ Aviation Gasoline ☐ Other: (be specific) _____

rce of Release (specify all that apply):
pills/overfills ☐ Piping leaks ☐ Dispenser leaks ☐ Tank corrosion ☒ Other: Draining of water from tanks

'es ☐ No Has a receptor survey been conducted?
'es ☐ No Has a water well inventory been conducted?

'es ☒ No Have vapor impacts to buildings or utility lines ever been associated with this release? If Yes, specify the measures taken to abate the impact and indicate the latest date that an impact was noted: _____

'es ☒ No Have subsurface utilities ever been affected with NAPL or vapors by this release? If Yes, indicate the latest date that an impact was noted: _____

ot already provided in *Release Determination Report Form* (TNRCC-0621), or if the information has changed since mittal of the *Release Determination Report*, indicate number of tanks currently and formerly located at this site (attach es as necessary):

	Type (UST/AST)	Product Type	Size (approx. gal)	Date Removed from Service
rrent:	Tank #20 (AST)	JP-4	42,000	
rmer:				

Yes ☐ No NA If the tanks were permanently removed from service, were native soil samples collected from beneath the tanks and the entire length of the piping? If No, explain why not: _____

Yes ☒ No Was a new UST system installed? If Yes, indicate the date, number of tanks and their contents: _____

Yes ☒ No Are there any open excavations at the site? If Yes, state size, location, purpose, and status for each of the excavations: _____

ype(s) of soil remediation and time periods the remediation method was operational (indicate all that apply):

Excavation _____ to _____ (dates), and
☐ Aboveground Bioremediation/Aeration _____ to _____ (dates), or
☐ Thermal Treatment _____ to _____ (dates), or
☐ Disposal _____ to _____ (dates).
Soil Vapor Extraction _____ to _____ (dates).
In-Situ Bioremediation 5/93 to 5/96 (dates).
None

III. RELEASE ABATEMENT/REMEDIATION

Date Release Discovered: _____

Substance(s) released: (check all that apply) ☐ Gasoline ☐ Alcohol-blended fuel (Type and percentage of alcohol: _____)
☐ Diesel ☐ Used Oil ☒ Jet Fuel (type: JP-4) ☐ Aviation Gasoline ☐ Other: (be specific) _____

Source of Release (specify all that apply):
☐ Spills/overfills ☐ Piping leaks ☐ Dispenser leaks ☐ Tank corrosion ☒ Other: Draining of water from tanks

☐ Yes ☐ No Has a receptor survey been conducted?
☐ Yes ☐ No Has a water well inventory been conducted?

☐ Yes ☒ No Have vapor impacts to buildings or utility lines ever been associated with this release? If Yes, specify the measures taken to abate the impact and indicate the latest date that an impact was noted:

_____

_____

☐ Yes ☒ No Have subsurface utilities ever been affected with NAPL or vapors by this release? If Yes, indicate the latest date that an impact was noted: _____

If not already provided in *Release Determination Report Form* (TNRCC-0621), or if the information has changed since submittal of the *Release Determination Report*, indicate number of tanks currently and formerly located at this site (attach pages as necessary):

	Type (UST/AST)	Product Type	Size (approx. gal)	
Current:	Tank #20 (AST)	JP-4	42,000	
				Date Removed from Service
Former:				

☐ Yes ☐ No NA If the tanks were permanently removed from service, were native soil samples collected from beneath the tanks and the entire length of the piping? If No, explain why not:

_____

☐ Yes ☒ No Was a new UST system installed? If Yes, indicate the date, number of tanks and their contents:

_____

☐ Yes ☒ No Are there any open excavations at the site? If Yes, state size, location, purpose, and status for each of the excavations: _____

_____

Type(s) of soil remediation and time periods the remediation method was operational (indicate all that apply):
☐ Excavation _____ to _____ (dates), and
☐ Aboveground Bioremediation/Aeration _____ to _____ (dates), or
☐ Thermal Treatment _____ to _____ (dates), or
☐ Disposal _____ to _____ (dates).
☐ Soil Vapor Extraction _____ to _____ (dates).
In-Situ Bioremediation 5/93 to 5/96 (dates).
None

III. RELEASE ABATEMENT/REMEDIATION (Continued)

Type(s) of groundwater remediation and time periods the remediation method was operational (indicate all that apply)

- ☐ Groundwater Pump and Treat _____ to _____ (dates)
- ☐ Air Sparging/SVE _____ to _____ (dates)
- ☐ In-Situ Bioremediation _____ to _____ (dates)
- ☐ Other: _____ _____ to _____ (dates)
- ☒ None

☒ Yes ☐ No - Were copies of all receipts and manifests to document disposition of all wastes submitted to the T
NA If No, attach copies to this form.
in situ treatment

Measured total volume of NAPL recovered: _____ gallons.

Estimated total volume of soil treated/removed: _____ cubic yards (exclude soil cuttings removed from borings).

Estimated total volume of groundwater treated/removed: _____ gallons (if known).

Estimated pounds of hydrocarbons removed or treated from soil (if known): _____

Estimated pounds of hydrocarbons removed or treated from groundwater (if known): _____

Estimated percent of total contaminants removed or treated (if known): _____

IV. SOIL DATA VALIDATION

Are there now affected surface soils (contamination exceeding health-based target concentrations) present within 2 feet below the ground surface? ☐ Yes ☒ No ☐ Unknown

Type of surface cover over affected surface soil area:

☒ Paved [☒ Asphalt or ☒ Concrete] Percent of affected soils covered? 75-100 ☐ Unpaved

☐ Other: _____

Is there public access to the uncovered affected surface soil area? ☐ Yes ☒ No

Total number of borings: 17 (including those completed as monitor wells)

☒ Yes ☐ No Was the vertical and horizontal extent of soil impacts defined (to the more stringent of health-based target or groundwater protective soil concentrations horizontally and to groundwater or nondetect vertically) by the borings?

☐ Yes ☒ No Are shallow (0-15 feet below ground surface) soils affected (contaminant levels exceed health-based target concentrations) on adjacent properties (including right-of-way properties).

☒ Yes ☐ No Were all soil sample collection, handling, transport, and analytical procedures conducted in accordance with TNRCC and EPA requirements? If No, provide justification: _____

MAXIMUM SOIL CONCENTRATION LEVELS

Soil Contaminants	Sample Date	Sample Location	Depth (in feet below ground surface)	Analytical Method	Maximum Concentration* (mg/kg)	Target Cleanup Goals** (indicate source of target cleanup goals: 1990 or 1994 [Plan A or B] guidance)
Benzene	8/27/92	B1	9.0 ft	8020	less than 0.4	6.3
Toluene	8/27/92	B1	9.0 ft	8020	0.4	3257
Ethylbenzene	3/18/93	MPA	1.0 ft	8020	13.0	3357
Total Xylenes	3/18/93	MPA	1.0 ft	8020	130.0	968
Total BTEX						
TPH	8/28/92	B8-2	2.0 ft	418.1	1100.0	NA
Other Total Lead	8/28/92	B6-3	3.0 ft	690	21.0	NA
Other Napthalene					99.0	782

Enter maximum soil analytical results for soils remaining beneath the site (take into account all available data, including information obtained during the release determination (tank removal from service, minimal site assessment, etc)).

If Plan A cleanup goals were used, provide the potential groundwater beneficial use category and a justification of how it was determined in Section VI.

1990 cleanup goals may be used only if all activities necessary to meet those goals were completed by November 8, 1995.

V. GROUNDWATER DATA VALIDATION

Is groundwater at the site impacted? ☐ Yes ☒ No

Did the assessment document that groundwater was not impacted? ☒ Yes ☐ No If No or unsure, provide justificatic not determining whether there is a groundwater impact: Water was only encountered in one of the th wells constructed around tank 20. MW13 was the only well with recoverable water vol

Total number of monitoring wells installed: 3 Number of monitor wells remaining at the site: 3
Will any of the remaining wells be used in the future? ☒ Yes ☐ No If Yes, specify exactly which well(s) will be use All three wells will be maintained for use in monitoring potential leaks from other tanks in the vicinity.
If No, they must be plugged in accordance with 30 TAC Chapter 338 after obtaining approval for site closure. D the wells until you receive concurrence on site closure. Costs of well plugging may be allowable for reimbursement eligibility requirements are met and if the wells were installed under the direction of the TNRCC specifically to addr confirmed release at the site. Provide a proposal with this form (if the site is eligible for reimbursement) for costs well plugging.

Measured total dissolved solids (TDS) concentration in groundwater: 572 mg/l. From which monitor well(was/were the sample(s) collected? MW13

Measured groundwater yield at the site: _____ gallons/day (as determined from well adequately screened impacted aquifer). ☒ Not determined.

Measured groundwater depth at the site ranges between 20 and NA feet below the top of well casing.

Time period of groundwater monitoring at the site (dates): 9/22/92 to NA

Total number of groundwater monitoring events: one

What type of aquifer is impacted? (unconfined, confined, semi-confined): unconfined - perched

Distance from maximum plume concentration point to nearest existing downgradient well location (not monitor w <0.5 mile ft. in _____ direction (Input ">0.5 mile" if there is no well within 0.5 mile downgradient)

Are any water supply wells impacted or immediately threatened? ☐ Yes ☒ No
If Yes, specify type of well: ☐ Drinking water ☐ Non-drinking water

Are there any existing water wells located within the area of impacted groundwater? ☐ Yes ☒ No
If Yes, specify type of well: ☐ Drinking water ☐ Non-drinking water

Has surface water been affected? ☐ Yes ☒ No

Will the groundwater contaminants likely discharge to a surface water body? ☐ Yes ☒ No

What is the potential impact of affected groundwater discharge on surface water?
☐ Current impact ☐ Discharges within 500 ft. ☐ Discharges within 500 to 0.25 miles
☒ No potential impact

☒ Yes ☐ No Were groundwater sample collection, handling, transport, and analytical procedures conducted a documented in accordance with TNRCC requirements? If no, provide justification: _____

V. GROUNDWATER DATA VALIDATION (Continued)

☒ Yes ☐ No — Is the extent of groundwater contamination defined (to MCL concentrations)? If No, provide justification for not defining the plume: Groundwater contamination resulting from a release from the tank 20 site would be limited to the area near MW13.

☐ Yes ☒ No — Have groundwater impacts from this release been detected on adjacent properties? If No, is off-site migration probable? ☐ Yes ☒ No Is there documentation that off-site migration has **not** occurred (sample results from off-site sampling point)? ☒ Yes ☐ No

☐ Yes ☒ No - Was the static groundwater level above the top of the well screen in any monitor wells during any of the last 4 monitoring events? If Yes, provide a statement of validity regarding these samples:

☒ Yes ☐ No NA — Have groundwater samples from all monitor wells met the target cleanup goals for the last four consecutive sampling events?

MAXIMUM GROUNDWATER CONCENTRATIONS

Groundwater Contaminants	Sample Date	Sample Location	Laboratory Method	Maximum Concentration* (mg/l)	Target Cleanup Goals** *(indicate source of target cleanup goals: 1990 or 1994 [Plan A or B] guidance)*
enzene	9/22/92	MW13	8020	0.200	NA
Toluene	9/22/92	MW13	8020	less than 0.001	NA
thylbenzene	9/22/92	MW13	8020	0.006	NA
Total Xylenes	9/22/92	MW13	8020	less than 0.001	NA
otal BTEX					
TPH	9/22/92	MW13	418.1	4.9	NA
ther _____					
Other					

* Enter maximum groundwater analytical results from the most recent 12 months of monitoring.

** 1990 cleanup goals may be used only if all activities necessary to meet those goals were completed by November 8, 1995.

No target groundwater concentrations listed for beneficial use category IV groundwater.

VI. JUSTIFICATION FOR CLOSURE

Please provide a brief summary supporting this request for site closure, including footnoted discussions for the above entries as necessary. **Include discussions providing necessary justifications for any site conditions which deviate from the specific requirements of TNRCC rules and policies, including the document *Risk-Based Corrective Action for Leaking Storage Tank Sites*.** Provide documentation to justify case closure, including information which addresses the potential for future exposure, the existence of impervious cover or other actions which may prevent exposure or limit infiltration, the absence of receptors, etc.

Data from soil samples collected at the site in 1992 and 1993 showed that contaminant levels at the site were close to meeting State of Texas risk-based criteria for Beneficial Groundwater Use Category I. In March 1993, a pilot scale bioventing system was installed at the site by Parsons ES. No soil sampling after 1993 has been performed at the site due to a high density polyethelene (HDPE) liner that was installed after bioventing system installation. However, soil gas analytical data collected 1 year and 3 years after system installation indicate substantial reductions in hydrocarbon contamination. BTEX concentrations in soil gas were reduced to nondetect, or near nondetect levels, during the first year of system operation. BTEX concentrations generally were further reduced as a result of bioventing performed under the extended program. Field and analytical soil gas results strongly suggest nearly complete remediation of hydrocarbon contaminants at the Tank #20 site. The potentially impacted uppermost groundwater was considered beneficial use category 4 because it was only encountered in one of the three monitoring wells installed at the site. Because of the discontinuous and perched nature of groundwater beneath the site, the anticipated yield from this aquifer is less than 150 gallons/day.

VII. REPORT PREPARATION

Based on the results of the site investigation and the additional information presented herein, I certify that the site investigation activities performed either by me, or under my direct supervision, including subcontracted work, were conducted in accordance with accepted industry standards/practices and further, that all such tasks were conducted in compliance with applicable TNRCC published rules, guidelines and the laws of the State of Texas. I have reviewed the information included within this report, and consider it to be complete, accurate and representative of the conditions discovered during the site investigation. I acknowledge that if I intentionally or knowingly make false statements, representations, or certifications in this report, I may be subject to administrative, civil, and/or criminal penalties. **I certify that the site has met all requirements for closure and that closure is appropriate.**

Project Manager: Brian Vanderglas CAPM No.: 00758 Expiration date: 8/11/97

Company: Parsons Engineering Science, Inc.

Address: 8000 Centre Park Drive City: Austin State: TX Zip: 78754

Telephone No.: (512) 719-6000 Fax No.: (512) 719-6099

Signature: Brian Vanderglas Date: 25 March 1997

By my signature affixed below, I certify that I am the duly authorized representative of the Correction Action Specialist named and that I have personally reviewed the site investigation results and other relevant information presented herein and considered them to be in accordance with accepted standards/practices and in compliance with the applicable TNRCC published rules, guidelines and the laws of the State of Texas. Further, that the information presented herein is considered complete, accurate and representative of the conditions discovered during the site investigation. I acknowledge that if I intentionally or knowingly make false statements, representations, or certifications in this report, I may be subject to administrative, civil, and/or criminal penalties. **I certify that the site has met all requirements for closure and that closure is appropriate.**

Corrective Action Specialist: Parsons Engineering Science CAS No.: 00101 Expiration date: 10/16/97

Company: Parsons Engineering Science, Inc.

Address: 8000 Centre Park Drive, Suite 200 City: Austin State: TX Zip: 78754

Telephone No.: (512) 719-6000 Fax No.: (512) 719-6099

Signature: Brian Vanderglas Date: 25 March 1997

By my signature affixed below, I certify that I have reviewed this report for accuracy and completeness of information regarding points of contact and the facility and storage tank system history and status. I acknowledge that if I intentionally or knowingly make false statements, representations, or certifications in this report related to the contact information, and the facility and storage tank system history and status information, I may be subject to administrative, civil, and/or criminal penalties. I attest that I have reviewed this report for accuracy and completeness. I understand that I am responsible for addressing this matter. **certify that the site has met all requirements for closure and that closure is appropriate.**

Name of Responsible Party contact: _____

Telephone No.: _____ Fax No.: _____

Signature: _____ Date: _____

E FOLLOWING ITEMS MUST BE SUBMITTED WITH THIS FORM IF NOT PREVIOUSLY SUBMITTED:

. site map illustrating the locations of the entire UST and/or AST system (including piping, dispensers, observation wells, etc.), ll soil borings and monitoring wells and all other sampling points, subsurface utilities, and surface water within 500 feet.

A copy of the latest groundwater gradient map (if monitor wells were completed).

ummary tables of all soil, groundwater and surface water analytical results, including samples collected from any tank removal om service activities, tank system repair activities, and those collected from borings and monitor wells. The tables must clearly identify the sample number, date of collection, sampling locations, depths (if applicable), and analytical results.

opies of any manifests or other waste receipts, and any other documents necessary for case closure.